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The question of retirement : an examination of the factors relevant to the retirement decision of the individual naval officer

Berkebile, Donald Freeman

Monterey, California. Naval Postgraduate School

NAVAL POSTGRADUATE SCHOOL
Monterey, California

THESIS

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the potential retiree should consider prior to electing voluntary retirement were developed. A present value analysis was used to present various financial options related to the officer's marketability in the civilian sector, his military career, and personal goals. No decision on the most opportune retirement point was reached or intended. It was concluded that the voluntary retirement decision is completely individual and not clear cut and that extensive planning is required prior to retirement.

The Question of Retirement: An Examination of the Factors Relevant to the Retirement Decision of the Individual Naval Officer

by

Donald Freeman Berkebile
Lieutenant Commander, United States Navy
B.S., U.S. Naval Academy, 1966

and

Robert David Gaudi
Lieutenant, United States Navy
B.A., Southern Illinois University, 1968

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requirements for the degree of

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June 1976

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TABLE OF CONTENTS

LIST OF TABLES

I. INTRODUCTION

Active duty military personnel have at their disposal one of the most generous of all retirement programs. Not only does the Uniformed Services Retirement System provide for a minimum retired pay of 50 percent of active duty base pay, it also provides this compensation after only 20 years of active duty service. An option to retire with commensurate lifetime income stream at the age of 42 or 43 may become particularly attractive to a naval officer as he potentially has available to him a second career covering a span of perhaps 23 or more years.

A. BACKGROUND

Assuming that a military officer remains on active duty for a minimum of 20 years, he is faced with a decision regarding the point at which he should retire. That is, should he remain on active duty until he has completed 30 years (assuming he is eligible to do so, i.e., not mandatorily retired prior to 30 years), or should he retire at some point after 20 and prior to 30 years of active duty service?

If a naval officer should select or be forced to retire at anytime prior to 30 years of active duty service, he will not receive the maximum retirement benefit of 75 percent of his monthly base pay. On the other hand, if he chooses to retire prior to 30 years, he may utilize the difference between retirement prior to 30 years and retirement at 30 years as additional

time in pursuit of a second career. As Morris Janowitz points out

> Military service for both officers and enlisted personnel is becoming more and more the first phase in a two-phase career in which the soldier leaves the military service in midcareer for civilian employment. [Janowitz, 1964, p. 24]

The earlier one retires prior to the 30 year point, the more years one has available for a second career. In fact, it could be considered not only desirable but necessary to pursue a second career if one retires far enough in advance of the 30 year point. This is because retirement benefits from an early retirement alone may not sustain a family without supplemental income, especially if that family has a desire to maintain their previous standard of living. In economic literature this is referred to as the 'Duesenberry effect.' Duesenberry theorized that,

> Reductions in income do pose problems for consumers and the hypothesized behavior that they will try to retain old habits for as long as possible is very plausible. It is not easy to break old habits, especially when one is asked to give up consuming goods to which one has grown accustomed. [Campagna, 1974, p. 138]

B. STATEMENT OF THE PROBLEM

The decision the naval officer must make may appear to be relatively uncomplicated; he can either retire or remain on active duty. Yet, this decision is not that simple or devoid of complications as there exist numerous factors which should influence his decision.

The potential retiree thus may have a difficult choice to make, one full of uncertainties and ambiguities and shaped by

outside influences. It is our contention that many naval officers approach the retirement decision without proper planning and without a full or adequate realization of the relevant factors worthy of careful consideration when making their choice. Stated simply, many naval officers must make a vitally important decision for which they are often completely unprepared.

C. THESIS OBJECTIVES AND SIGNIFICANCE OF THE ANALYSIS

Traditionally, a person who elects to retire earlier than required does so for one of two reasons: he or she either wants to change jobs to improve the chances for promotion (advancement), or simply wishes to cease working altogether. However, there are people in civilian employment as well as the military who once at or nearing the higher echelons of management find their own personal needs (goals) are not being satisfied. [Damroth, 1975] What happens to them after they leave one career? What criteria are relevant to this career change? What adjustments are necessary and how will advance planning affect the situation?

In recent years more and more naval officers are leaving the service after completion of the minimum required retirement eligibility period - this correlates with what is beginning to be called mid-career job change in the civilian sector. Mid-career change refers to completing and terminating one entire career in the middle years, and then entering into a second and often completely different career. [Driskill, 1975] This mid-career job change can be voluntary, in which the individual terminates his current career for a variety of reasons, usually

related to the need to acquire increased reward and satisfaction from the job; or involuntary, in which the individual is forced out of his present occupation. Generally, the major reason for a voluntary change is "to do what I want to do," (i.e., self-actualization) coupled with increased pay, promotional opportunity, recognition, and to alleviate personality clashes with supervisors.

The post World War II political and diplomatic environment in conjunction with rapid technical advancement changed the required skills of military officers, the size of our military establishment, and our officer personnel management policies. The typical military officer now enters active duty with a minimum of a bachelor's degree, additionally, military officer skills and training have become more technical and business related; thus the marketability of ex-military officers in the civilian sector has substantially increased. In many cases there is now little or no significant difference in the job functions of military and civilian occupations.

New promotional policies have been instituted to assure a young, dynamic corps of officers who are promoted on a "best fitted" criteria. The possible involuntary retirement terminates an officer's military career at an age wherein true retirement would not be desirable or financially practical in most cases. With this "up or out" management policy very few officers remain on active duty beyond twenty years of service. Therefore, in contrast to the past, when most career officers felt they would not be active participants in

the labor market upon retirement, they are, due to their age, increased life expectancy, and financial needs, forced to begin a second career in the civilian market.

An officer who has served his mature lifetime in the military naturally faces the mid-career change to civilian employment with some trepidation. He is highly confident of his knowledge and ability, and is positive that he can make a viable contribution to society as a civilian, just as he did as an officer. Still, the prospect of leaving the military at such an early date will force the officer to face several major problems including: the standard of living he can expect after retirement, the transferability of his military skills to the civilian job market, the severity of the psychological adjustment from military to civilian life, and the possibility of a loss of economic and/or social status.

There are certain transitional problems experienced by retirees including financial assessments, life insurance requirements, and survivors' benefits. To date, the literature and research available concerning the mid-career job change of military officers has concentrated on these difficulties and on whether they require that assistance be given through revisions in existing laws or the establishment of special counseling programs. Our research will concern the major factors that an officer should consider well in advance of reaching retirement eligibility.

After completion of twenty years of service, an officer faces a decision point on the length of the remainder of his military career. Normally, he can retire any time after this

point. If he does not elect voluntary retirement, he faces involuntary retirement at twenty-six years of service if not selected for promotion to O-6 or at thirty years of service if he is not selected for flag rank. The average age of an officer with twenty years of service is 42-43 years while a thirty year retiree is normally 52-53 years old. Thus, he is too young to be content with inactivity and his financial needs usually far exceed his retirement pay. Also, this period often coincides with the peak financial demands of education for his children. [Lenz, 1968]

The normal situation confronting a military officer is that at some point he has to make a transition to a second career. Given this transition, substantial advance planning should be undertaken to determine, from the range of retirement opportunities available, the optimum time at which to retire to maximize his expected future income and/or other goals.

From research, it is very evident that most of the planning for retirement occurs after the decision has been made to retire. [Kelly, 1961] Furthermore, the planning thus performed is incomplete and tends to concentrate mainly on the urgent need to supplement the retirement pay. It is often too late then to adjust the time of retirement to optimize the situation. It is difficult to understand how military officers accustomed to working in an organized systematic manner can accept entering into retirement with so little planning and forethought. A long range second career plan should be developed and tailored to the individual officer years before he

reaches retirement eligibility and should include a more comprehensive viewpoint.

We propose that the potential retiree should consider at least the following factors: his military career and promotional prospects, his personal financial goals and situation, the adjustment to military retirement, the nation's general economic situation, his marketable skills and civilian employment opportunities, and his individual/personal goals. LTCOL Thomas A. Kelly, Chief of the Retired Activities Unit of the Army Adjutant General's Office, summed up the need for retirement planning.

> The first step in the solution of any problem is recognition that the problem exists. In order to make a smooth and orderly transition into the retirement life of tomorrow, the military man of today must take a periodic inventory of himself and identify those areas in his entire makeup where problems exist or where they may develop. In so doing, he is laying the groundwork for his future - not only the intermediate future of retirement but also the immediate future of his military career. [Kelly, 1961, p. 20]

For purposes of simplification and personal interest, we will consider the relevant factors in the decision when to elect retirement from the point of view of two male naval officers - one an 111X, surface warfare officer, and one a 131X, avaition officer.

D. INVESTIGATIVE PROCESS

A search of the literature was conducted in order to gain background information and source data. The discovery was soon made that although numerous studies had been undertaken regarding retirement and retirement related topics, few had

been conducted which dealt with the retirement decision per se. [Greenamyer, 1974; Johnson, 1971; Holladay, 1975, are examples.] Previous studies dealing with the retirement decision were primarily concerned with the financial aspect of the decision and tended to give little or no consideration to other factors relevant to the decision. The bulk of this material resulted from the efforts of other military officers in the form of unpublished research papers, theses and doctoral dissertations.

In addition to the literature research, various military retirement associations were contacted by mail. Recent information on certain statistics was unavailable through normal research, and, as time constraints precluded a survey of the magnitude required for any reasonable degree of credibility or statistical significance, it was hoped one or more of the retirement organizations could provide the needed information. However, only The Retired Officers Association (TROA) provided any substantial assistance. TROA conducted surveys of its membership in 1972 and 1975 concerning, among other things, their post-retirement employment and financial situations. The results of the 1975 indepth survey have not been completely assimilated to date.

II. EVOLUTION OF THE UNIFORMED SERVICES RETIREMENT SYSTEM

Before considering the situation with which the naval officer of today is confronted, it is in order to review the manner in which the current retirement system evolved.

A. REVOLUTIONARY WAR VINTAGE

Military retirement practices of one form or another can be traced as far back as the Revolutionary War. During this era, one-half pay for life was promised to officers remaining on active duty until the end of the war. Some states provided that officers might elect to receive a lump sum payment of five years full salary, either in money or in 6 percent interest-bearing securities at the pleasure of the Congress in lieu of half-pay for life. In addition, one-half pay for life for the length of disability was promised to all veterans during this era as compensation for disability incurred in service.

B. POST REVOLUTIONARY WAR

After the Revolutionary War numerous retirement and disability retirement plans were initiated and enacted by Congress to cover various circumstances. None, however, was permanent in nature or designed to provide more than temporary or conditional retirement benefits.

C. A PERIOD OF TRANSITION

The period 1812-1861 was a transition period where a disability retirement plan was in effect but not a non-disability

retirement plan. There was a distinct need for a non-disability retirement plan during this time period as many officers and soldiers serving on active duty could not qualify for disability retirement yet were not fit to remain on active duty in field service.

This particular phenomenon gradually produced the evolution of the "physical incapacity due to age" concept which served to rid the services of those personnel who had served 30 to 50 years and were simply too old to fight a vigorous war. This eventually led to the "length of service" retirement and pension concept. This concept was designed to remove older personnel and make room for younger, more vigorous personnel. "An Act for the Better Organization of the Military Establishment" was passed in 1861. The passage of this act helped establish the "length of service" retirement concept.

D. AFTER THE CIVIL WAR

The post Civil War period saw an increasing development of the "length of service" retirement concept. The option to retire after 30 years of active service began in 1870 and mandatory retirement for failure to be promoted was initiated by the Navy in 1899, a practice which remains in effect to this day.[1]

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[1]This is basically the "up or out" concept which dictates that if an officer is not promoted he will be forced out of the service. This eliminates those personnel who do not perform up to current standards and allows for the upward migration of younger officers.

E. TOWARD A MODERN SYSTEM

A significant point worth considering is that prior to World War II a military line or field officer was considered a professional military man who really had no skills transferable to civilian employment. He was proud of his abilities and his profession and he was not particularly motivated to retire prior to fulfillment of a lifetime career. This point of view began to change with the development of the modern retirement system.

F. OFFICER PERSONNEL ACT OF 1947

Current retirement practices are based upon laws passed between 1946 and 1949. One such act was the Officer Personnel Act of 1947. This Act was designed to remove older officers from the active ranks and prevent them from achieving positions of high authority simply thru seniority.

Basically, the Act provides for retirement pay based on length of service. Regular or reserve officers may be retired upon application and approval by their respective service secretaries after they have completed 20 years of active service, ten of which are as commissioned officers. The most significant aspect of the Act is that regular officers, except flag or general officers, are subject to mandatory retirement if they are not promoted after serving a certain number of years in grade. These points of mandatory retirement vary with the individual services and ranks. For the Navy, mandatory retirement is imposed upon all officers according to Table I.

TABLE I

MANDATORY RETIREMENT

Rank	Failed to select for	Retired at
O-4 (LCDR)	O-5	20 yrs of active serv.
O-5 (CDR)	O-6	26 yrs of active serv.
O-6 (CAPT)	O-7	30 yrs of active serv.

O-7 (RADM) and above may serve up to 35 years or more, or, in certain cases to age 62.

Thus, with the passage of the Officer Personnel Act of 1947, the officer was faced with the possibility of being forced to retire at 20 years of service or at certain predetermined points after 20 and prior to 30 years of service. No longer was an officer reasonably assured of being retained on active duty for 30 or perhaps even 40 years.

G. RECOMPUTATION OF RETIRED PAY

The Act of May 20, 1958, which became Public Law 85-422, brought to a halt the practice of recomputation of retired pay. Recomputation of retired pay (RECOMP) was the practice whereby retired pay was geared to increases or decreases in active duty pay. If active duty members received a percentage increase in pay, retired members would receive the same percentage increase thus maintaining an income growth potential capable of at least offsetting some of the effects of inflation.

RECOMP was generally in effect from the First General Retirement Law in 1861 to the Joint Service Pay Act of 1922. RECOMP was again started in 1926 and continued until 1 June 1958.

The end of RECOMP constituted a significant blow to retired service personnel as it effectively permitted their retired pay to be eroded by inflation. No buffer against inflation was provided to enable a retired pay check to maintain a reasonably constant purchasing power.

H. UNIFORMED SERVICES PAY ACT OF 1963

Offsetting the effects of the 1958 Act was the Uniformed Services Pay Act of October 2, 1963 (Public Law 88-132). This Act tied adjustments to military retired pay to changes in the Consumer Price Index (CPI).

Other than the discontinuation of RECOMP and the institution of the CPI-tied retired pay increase, no major changes to the retirement laws have taken place in recent years.

I. THE CURRENT SYSTEM

Under retirement laws currently in effect, members of the military service first become eligible for retirement after 20 years of active duty service. This usually equates to the early to mid-forties for most officers.

Retirement pay at twenty years of service is computed at 50 percent of the individual's active duty base pay at retirement. This retirement pay increases at a rate of 2-1/2 percent per year to a maximum of 75 percent of the base pay at thirty years.

Over the years all the services have grown in size and complexity. Personnel have grown with the services to the point where not only do certain service specialties exist almost directly transferable to civilian jobs but the typical

officer is now more capable of filling positions in the civilian community closely resembling what he does or did in the military. Thus, it is now commonplace for the military officer to retire after only 20 years of active duty service to find suitable employment in the civilian community. Prior to World War II he might not have considered retiring prior to thirty years of active duty service.

Military retirement today is an extremely attractive plan to one able to take advantage of it. It was partially designed to compensate for the comparatively low wages previously paid to service personnel. Now, as a result of the significant military wage increases in the past ten years, the current plan ranks high on the scale of retirement plans in the U.S.

III. CAREER PATTERNS AND PROMOTIONAL PROSPECTS

Published career patterns and promotional opportunities in the Navy have always been directed at the aggregate rather than the individual. Although no specific qualifications and criteria are formally established for promotion, certain experience and qualifications receive more emphasis than others. Some specific qualifications have become virtual prerequisities for subsequent assignments, especially in the operational billets leading to aircraft squadron or ship command. From the view of promotional prospects the real significance of particular past billets, qualifications, experience, and performance is how an individual compares relative to the aggregate of his contemporaries. Selection boards are charged with selecting the "best suited" officers to fill projected needs and requirements from a particular group of candidates.

A. PROMOTION OPPORTUNITY

1. Recent promotion opportunity (percent) for officers in the primary zone of consideration.

Selection to	Fiscal Year 1975 111X/131X designator*	Fiscal Year 1976 111X/131X designator*
LCDR (04)	66.7%/66.1%	72.0%/59.0%
CDR (05)	52.9%/56.8%	62.8%/63.7%
CAPT (06)	51.0%/47.5%	48.2%/46.9%
FLAG (07)	1.5%	1.5%

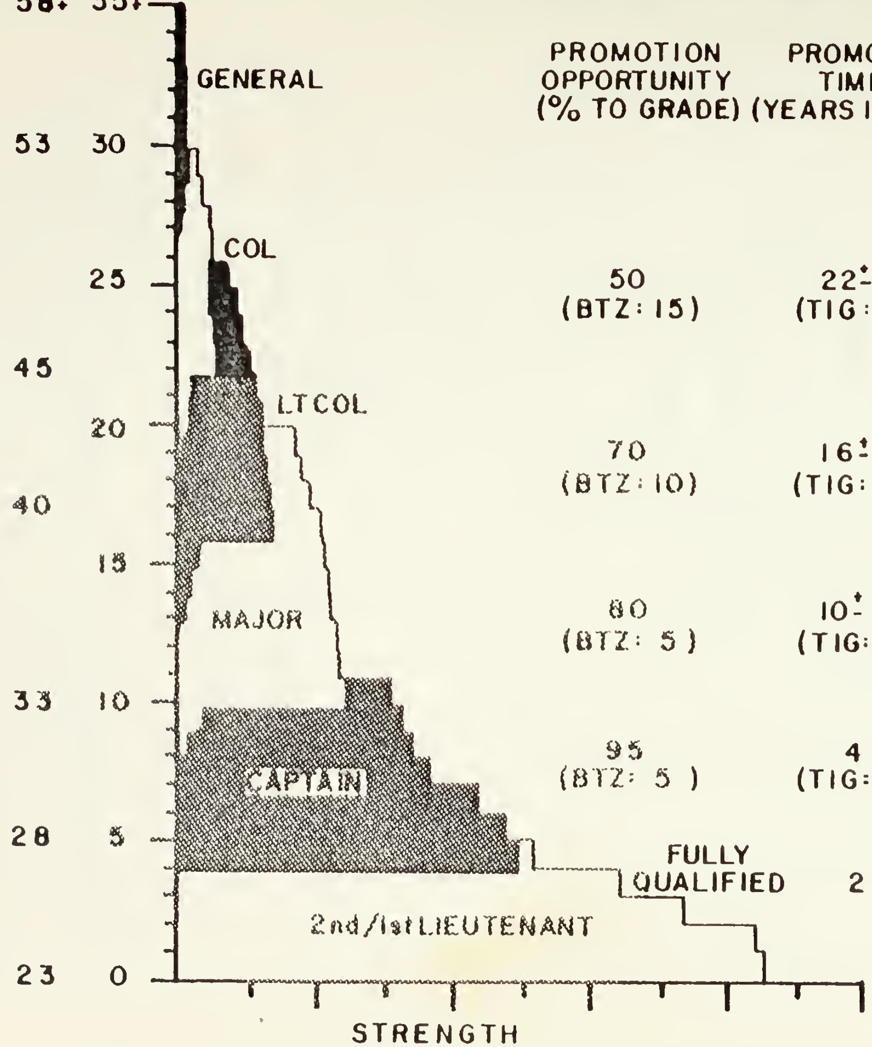
*Indicates Surface Warfare Officers and Aviation Pilot Officers, respectively.

2. <u>Defense Officer Personnel Management Act (DOPMA) proposal</u>.

The DOPMA proposal was introduced in legislative form to Congress in May 1975 and contains the statutory authority to provide a uniform promotion and officer strength management system for the armed services. DOPMA would revise or eliminate over 300 actions of present law and modify others. It is not really a radical change, but more designed to clear up existing differences between the services and the management of male and female officers. A major change proposed is in the tenure (involuntary retirement provisions) of O-4's, O-5's, and O-6's. The service secretaries would have the authority to manage the officer grade structure and to insure adequate promotional opportunities exist to retain a viable promotion system through the convening of continuation boards for O-4's, O-5's, and O-6's, who have twice failed selection to the next higher grade. These boards would select a limited percentage of the subject officers for involuntary retirement prior to the normal mandatory retirement points. An officer would only face one continuation board for each grade. The characteristics of the DOPMA promotion system are shown in Figure 1.

Historical promotion opportunities and those envisioned under DOPMA are essentially the same with the DOPMA percentage slightly higher due to the inclusion of above and below zone projected selectees. Another major difference in the DOPMA proposal is in the promotion timing or promotion flow points. Over the last few years the Navy has increased the intervals between promotions and is approaching those in the DOPMA

DIMENSIONS AND CHARACTERISTICS OF DEFENSE OFFICER PROMOTION SYSTEM



PROMOTION OPPORTUNITY (% TO GRADE)	PROMOTION TIMING (YEARS IN SERVICE)	TENURE	CAREER PATTERN-100 NEWLY COMMISSIONED OFFICERS (NO. TO GRADE)
			1.6
50 (BTZ: 15)	22±1 (TIG: 6)	AFTER 4 YEARS IN GRADE BOARD REVIEW TO 30 YEARS	18
70 (BTZ: 10)	16±1 (TIG: 6)	2X NON-SELECT BOARD REVIEW TO 26 YEARS	41
80 (BTZ: 5)	10±1 (TIG: 6)	2X NON-SELECT BOARD REVIEW TO 20 YEARS	65
95 (BTZ: 5)	4 (TIG: 2)	2X NON-SELECT SEPARATION	87
FULLY QUALIFIED	2	2X NON-SELECT SEPARATION	96

LEGEND:
BTZ: Below-the-Zone
TIG: Time-in-Grade

Figure 1

proposal. Whereas an officer previously could expect to be selected for Captain (O-6) prior to completing twenty years of service, he now will have approximately twenty-two years of service before selection.

The selection criteria for Captain are useful to the individual Lieutenant Commander or Commander in evaluating his potential for selection and necessary career path to achieve selection. The published selection criteria for the grade of Captain in Fiscal Year 1975 were in summary [BUPERS, 1975]:

A. Potential of the grade of Captain

B. Past performance

1. Responsibility of assignments
2. Original contributions
3. Professional reputation

C. Breadth of Experience

1. Command or equivalent
2. Joint/large staff duty

D. Proven Combat Ability

E. Personal qualities

1. Imagination
2. Versatility
3. Leadership
4. Interpersonal relationships
5. Human goals contributions

F. Education

G. Operational Technical Managerial Spectrum

1. Subspecialty development

H. Special value to the service

I. POW experience

J. Age

B. CAREER PATTERNS

1. Figures 2 and 3 are the current career patterns (professional development paths) for aviation and surface warfare officers respectively as promulgated by the Officer Distribution Division of the Bureau of Naval Personnel. The horizontal axis represents 0 to 100 percent of the community as read from left to right, while the vertical axis is years of commissioned service. These are not rigid paths, but the current patterns in which the majority of officers fall.

2. One significant point that stands out in both tables in conjunction with the perception of most O-4 and O-5 aviation/surface warfare officers is that as seniority and rank increase the operational tours begin to disappear in favor of subspecialty, major staff, and Washington, D. C., billets. The authors often read and hear the opinion expressed by officers that after the realistic opportunities for command at sea have been replaced by pressure intensive desk billets, coupled with long working hours, the fun and really rewarding billets are gone. Hence, after completing a Commander command tour, some officers feel that a military career is no longer inviting.

These career patterns are complex, ever changing, and non-formal guidelines for the individual and the Bureau of Naval Personnel. Although no official restrictions are placed on the route an officer may choose to follow, historical

Figure 2

AVIATION OFFICER PROFESSIONAL DEVELOPMENT PATH

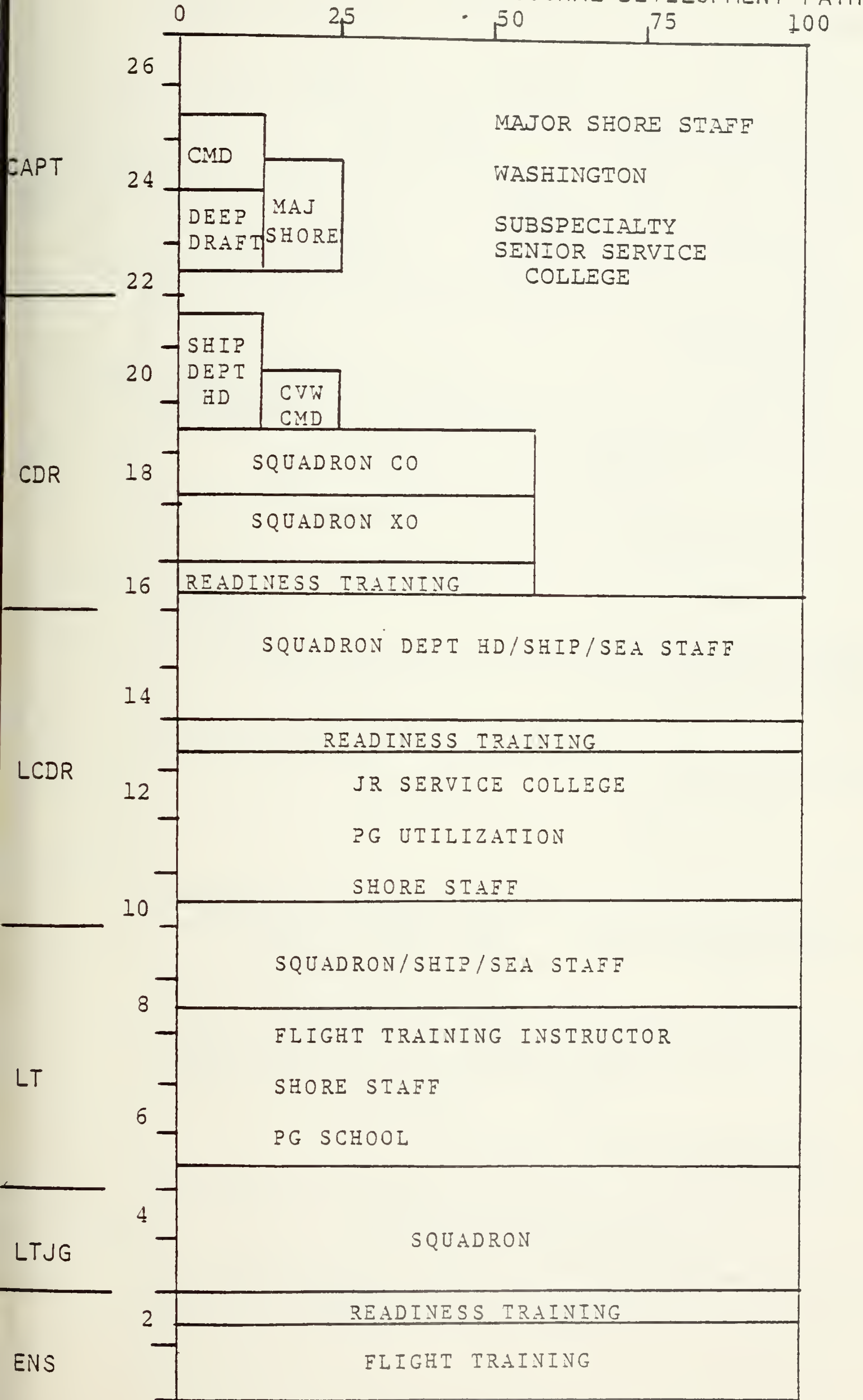
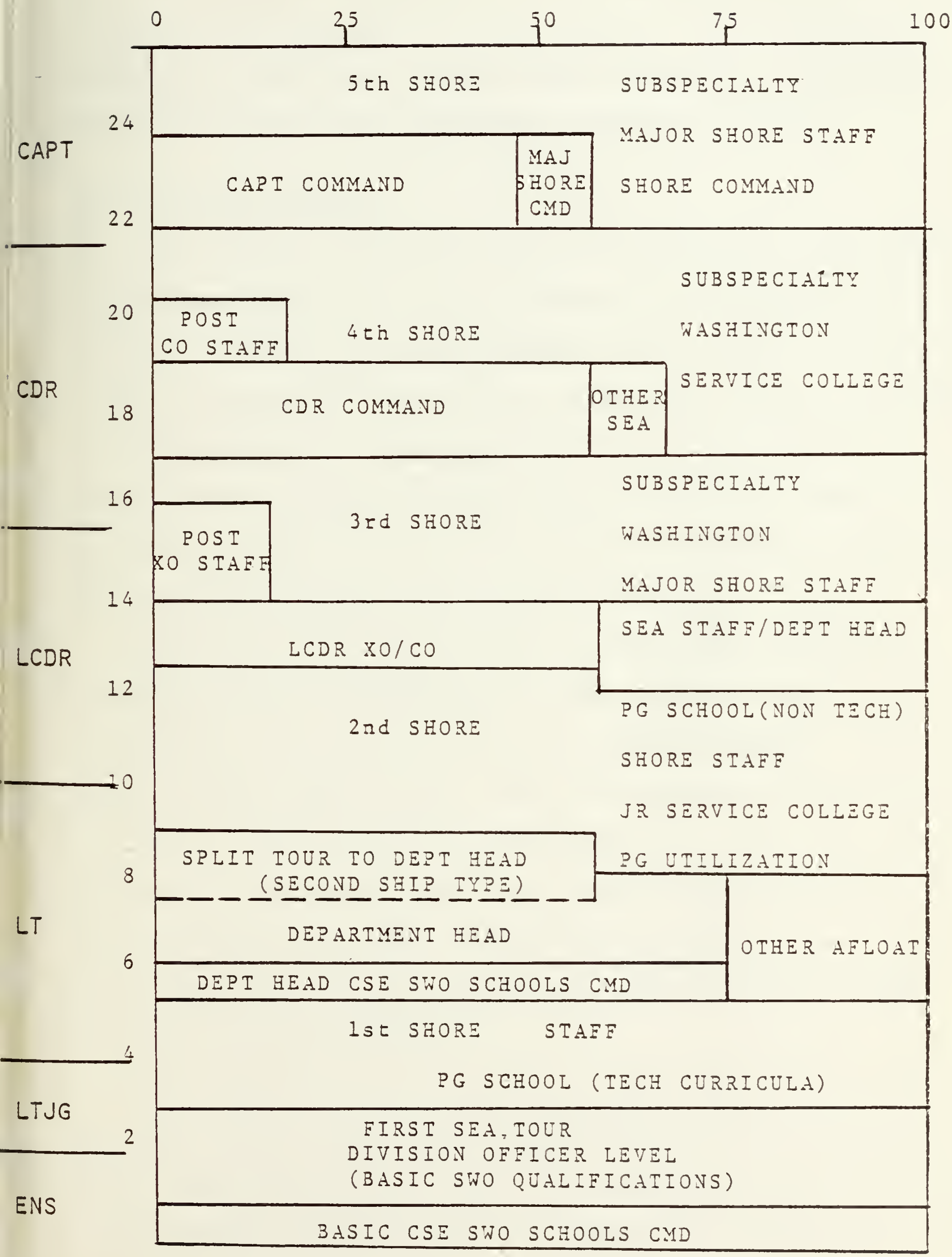


Figure 3

SURFACE WARFARE OFFICER PROFESSIONAL DEVELOPMENT PATH



promotion statistics indicate that unless an officer follows the general pattern he will be at a serious disadvantage when competing for promotion with his peers. This situation is compounded since every major career milestone is controlled by some form of formal selection screening process.

C. MILITARY FUTURE

After periodically reviewing the particular career pattern and accompanying promotional prospects, an officer should redefine or reaffirm his own military career goals. The significance of serving in operational billets for career development is well known as is their necessity for future promotion. Assignments to shore and staff billets are more complex and an area where the individual officer can substantially influence his assignment based on his personal goals.

Historically, billets closer to the higher levels of decision-making -- especially in Washington, D. C. -- have been regarded as more significant and career enhancing. However, education has always been a good bet whenever the opportunity arises. A prime objective of an officer's long range career plan should be to optimize his qualifications and skills for post-military employment. Often the opportunity arises to enhance both his military career and future civilian marketability at the same time.

Obviously, while on active duty the officer should not pursue any actions which might degrade his military performance of duty. How his personal goals and priorities mesh with potential military assignments is an important consideration. Does

he want a more stable and orderly family life? Does he vie for any billet anywhere that will improve his chances for the earliest future promotion? Does he desire to continue a military career as far as possible, but prefer to serve in a particular location or not at a particular location? After determining his personal priorities in relation to his military future, the officer must plan the route and type of billets he desires for the remainder of his military career. However, he must also be ready to accept the risks and hazards, such as non-selection for promotion, while following his career plan.

The second career portion of his plan which should be developed and integrated with his military career plan,

> To be successful, must provide for and include the following ingredients, all of which are interrelated: knowledge of civilian job opportunities; identification of reasonably attainable positions which would satisfy his life's goal; preparation to enhance qualifications for job objectives; and preparation for and the conduct of an effective job search. [Vick, 1974, p. 3]

IV. PERSONAL FINANCIAL SITUATION

A. INTRODUCTION

Perhaps the area of greatest concern to the potential retiree is that of his subsequent financial situation.

Having spent a minimum of 20 years on active duty the potential retiree has probably become accustomed to a secure and rather predictable income. Based on this income he has established certain patterns of spending which have allowed him to enjoy a particular standard of living.

With retirement comes the probability of an income that is different, either greater or less than, that available during active duty. To maintain the same standard of living, the retiree will be forced to either rearrange his spending priorities and amounts, or establish an additional source of income, or both.

Some of the potential income sources that relate to the retired naval officer and his efforts to maintain the standard of living to which he has become accustomed are the concern of this chapter.

B. SOURCES OF INCOME

We shall begin with income sources in the form of active duty pay and retired pay. For example, what is the retired pay an officer could expect if he chose to retire at a certain point in his career? Tables II and III show active duty pay and non-disability retired pay as of 1 October 1975, respectively.

TABLE II

ARMED FORCES ACTIVE DUTY PAY SCALE
- SELECTED RANKS AND YEARS OF SERVICE

EFFECTIVE 1 OCTOBER 1975

RANK	YEARS OF SERVICE			QUARTERS ALLOWANCE		BAS
	OVER 20	OVER 22	OVER 26	WITHOUT DEPENDENTS	WITH DEPENDENTS	
O-10	3,150	3,150	3,150	255	319	53
O-9	3,150	3,150	3,150	255	319	53
O-8	3,054	3,150	3,150	255	319	53
O-7	2,762	2,762	2,762	255	319	53
O-6	2,114	2,237	2,426	235	286	53
O-5	1,913	1,980	1,980	220	265	53
O-4	1,655	1,655	1,655	198	239	53

- Rounded to Nearest Dollar -

TABLE III

MONTHLY RETIRED PAY FOR COMMISSIONED OFFICERS RETIRING AFTER 1 OCTOBER 1975											
GRADE	OVER 20	OVER 21	OVER 22	OVER 23	OVER 24	OVER 25	OVER 26	OVER 27	OVER 28	OVER 29	OVER 30
O-10	1,575	1,653	1,732	1,811	1,890	1,968	2,047	2,126	2,205	2,283	2,362
O-9	1,575	1,653	1,732	1,811	1,890	1,968	2,047	2,126	2,205	2,283	2,362
O-8	1,526	1,602	1,732	1,811	1,890	1,968	2,047	2,126	2,205	2,283	2,362
O-7	1,380	1,449	1,518	1,587	1,656	1,725	1,794	1,863	1,932	2,001	2,071
O-6	1,057	1,109	1,238	1,286	1,342	1,398	1,557	1,637	1,698	1,758	1,820
O-5	956	1,004	1,088	1,138	1,187	1,236	1,286	1,335	1,385	1,434	1,485
O-4	827	869	910	951	993	1,034	1,075	1,117	1,158	1,199	1,242
O-3	715	751	787	822	858	894	930	966	1,001	1,037	1,073
O-2	531	557	584	610	637	663	690	716	743	770	797
O-1	419	440	460	481	502	523	544	565	586	607	629

- ROUNDED TO NEAREST DOLLAR -

C. ACTIVE DUTY INCOME

It should be noted that there are pay increases associated with longevity that occur at different points of service for different ranks. Commanders can expect a raise at 22 years and Captains a raise at 22 and again at 26 years. It should be noted also that there are no pay increases attributable to longevity for any rank after completion of 26 years of service and that different ranks reach their respective maximum pay levels at different points of years service. For example, an O-4 has already reached his maximum pay at 18 years while O-5's and O-6's reach their maximum pay points at 22 and 26 years, respectively.

D. RETIRED PAY

In Table III monthly retired pay is shown to increase for each additional year an officer remains on active duty past the 20 year point. After the 26 year point this increase is due solely to military retirement law which stipulates one-half base pay at 20 years increasing at 2-1/2% per year until a maximum of 75% of base pay is reached.

The pay increase and pay maximization points which are due to longevity are also depicted in Table III. The large pay increases that occur for the O-6 at 22 and 26 years are clearly reflected in retired pay when moving from over 21 to over 22 years service and from over 25 to over 26 years service.

If an officer were to study Table III and attempt to make a decision regarding at what point in his career he should retire (based entirely on the information in Table III), he might make any of several choices depending on his point of

view. An O-6 could feasibly choose the 26 year point rather than the 25 year point because the 26 year point pays $159 per month more than does the 25 year point while requiring only one additional year of service. On the other hand, the same officer could conceivably choose the 26 year point over the 27 year point because remaining for the additional year only increases his gross retirement pay by $80. The move from 25 to 26 years produced twice that amount.

The same O-6 might have a different point of view. He might decide that he has worked very hard to get where he is and that he not only wants but deserves the maximum retirement pay check obtainable. This officer would then choose to remain on active duty for 30 years, the maximum for an O-6. He would then receive $1,820 per month in retirement pay.

This type of reasoning would seem perfectly logical to some people. There are, however, certain other factors which must be considered and which prove the inadequacy of the previous evaluation.

E. TOTAL RETIRED PAY

Consider, for example, how much an officer could expect his monthly retirement check to amount to in total over the remainder of his life, i.e., the cumulative value of his retired pay received over a lifetime. This information was calculated by multiplying yearly retired pay times the number of years to mortality and is presented in Table IV. As expected, the large active duty pay increases experienced by the O-6 at 22 and again at 26 years of service are also reflected in this table. These increases now become more significant

TABLE IV

CUMULATIVE VALUE OF LIFETIME RETIRED PAY
(IN THOUSANDS OF DOLLARS)

BASED ON 1 OCTOBER 1975 PAY SCALE

	YEARS OF ACTIVE DUTY SERVICE										
GRADE	20	21	22	23	24	25	26	27	28	29	30
O-10	558	567	578	585	592	597	599	602	603	603	601
O-9	558	567	578	585	592	597	599	602	603	603	601
O-8	540	550	578	585	592	597	599	602	603	603	601
O-7	489	497	506	512	519	524	525	528	529	528	527
O-6	374	381	410	415	420	424	456	464	465	464	463
O-5	338	345	363	367	372	375	377	378	379	379	378
O-4	293	298	304	307	311	314	315	316	317	317	316
Age at Retirement	43	44	45	46	47	48	49	50	51	52	53
Years to * Mortality	29.5	28.6	27.8	26.9	26.1	25.3	24.4	23.6	22.8	22.0	21.2
Age at Mortality	72.5	72.6	72.8	72.9	73.1	73.3	73.4	73.6	73.8	74.0	74.2

ROUNDED TO NEAREST THOUSAND

*Source: U.S. Bureau of the Census, Statistical Abstract of the United States: 1975.

over the long term. For the O-6, the rationale of remaining on active duty from 25 to 26 years of service can now be seen, as this additional year accumulates to $32,000 over a lifetime. On the other hand, remaining on active duty from 26 to 27 years results in an increase of only $8,000.

The O-6 who remains on active duty until completion of 30 years in order to reap the maximum monthly O-6 retirement benefit of $1,820 may be doing himself an injustice. He could retire 1, 2, or 3 years earlier and accumulate more total retired pay because of the decrease which begins after year 28. Is it better to retire after 30 years and receive $1,820 per month, or is it better to retire after year 27 and receive $183 less per month but $1,000 more in total?

This is a question that only the individual officer can answer and he should not even attempt to answer it without the benefit of a much broader information base. A complete analysis of the retirement decision requires the review of numerous variables. The cumulative value of lifetime retired pay served to point out just one aspect of how time, as a factor, can influence the retirement decision. The time factor requires further consideration.

F. PRESENT VALUE

It is true that, as in Table IV, when one considers a monthly wage over an extended period of years, it takes on new significance. The monthly wage can be viewed as a single sum to be received over a lifetime rather than an amount received periodically at regular intervals in the future.

Looking forward to the reception of $100 per month for the next 30 years can be meaningless to many people. Consideration of this annuity of $100 as a single amount, $36,000 ($100 x 12 months x 30 years) achieves more meaning. The series of payments compressed into the single amount of $36,000 allows greater understanding and it is much more manageable.

This is a legitimate and logical approach to take when considering the receipts of payments over time; however, to be complete and conceptually correct, this method must account for the time value of money.

Present value is a means of accounting for the time value of money. Present value works on the assumption that $1 received at some time in the future is not worth as much as $1 today. That is, an amount of money that can be invested today is more valuable than an equal amount that will be available at some future time. This is because the money available today can be utilized to do any number of things, including earn still more money, whereas money that is not available today cannot. A dollar available today can be invested so that it is worth more than a dollar in the future. Or, from another point of view, receiving $1 one year from now denies one the opportunity to earn interest on that $1 for that year.

The present value concept involves three factors: a rate of return (interest rate), an amount of money, and a period of time. Given these three factors one may take any amount of money to be received at any time in the future, either in lump sum or in periodic payments, and 'discount' this future amount at a given interest (discount) rate in order to arrive at a

present value. An amount of (A) dollars to be received (n) periods from now is worth how much today at interest rate (i)? This is called 'discounting' and is much the same as inverse compounding of interest or deducting interest in advance.

For example, if one were to receive $10,000 ten years from now, what would that $10,000 be worth today at 8% interest? This is the same as asking what amount must be invested today at 8% in order to compound to $10,000 in 10 years. Using the present value formula of

$$P = \frac{A}{(1+i)^n}$$

the amount required can be found to be $4632.

The present value concept can also be applied to annuities (amounts paid per period) as well as to lump sums. The present value concept can thus be seen to allow us to look at a future stream of payments over a long period of time and see this amount of money as an equivalent amount today. The present value concept allows us to achieve a new perspective which attaches a more reasonable and meaningful value to future payments.

It should be understood that the present value concept and that of discounting is not the same as inflation. Inflation refers to a rise in the average price of currently produced goods and services. [Bach, p. 89] The decrease in the value of a dollar with an increase in time, due to inflation, is due to this average price rise. A dollar will be worth less in the future, due to inflation, simply because it won't buy as much as it does today.

Appendix A offers various formulas that may be utilized for simple present value computations. Also included in Appendix A are the somewhat more complex present value formulae utilized by the authors in computation of the present values utilized in this thesis.

Recall Table IV and the seemingly obvious choices which could be made regarding total cumulative retirement pay. It appeared that the longer an officer remained on active duty the more total benefits he could expect to receive up to and including 28 years of service. This could possibly lead some officers to conclude that it would be better to remain on active duty for periods up to 28 years in order to receive these greater total amounts.

This is not necessarily so, for as we just pointed out, Table IV does not consider the time value of money.

G. PRESENT VALUE OF TOTAL RETIRED PAY

Tables V and VI depict the present value of the total retired pay an officer could expect to receive given the grade and number of years indicated. The present value formula used to arrive at the figures in Tables V and VI is given in Appendix A.

These two tables are computed at discount rates of 5% and 8%, respectively. These two rates are used because they reflect the lower and upper bounds one could reasonably expect to receive on savings accounts and certificates of deposit at the present time. This is not to say these two rates are more correct than other rates that may be applied, or that these two

TABLE V

PRESENT VALUE OF CUMULATIVE RETIRED PAY (IN THOUSANDS OF DOLLARS)											
Computed at 20 years											5% Discount Rate
	YEARS OF ACTIVE DUTY SERVICE										
GRADE	20	21	22	23	24	25	26	27	28	29	30
O-8	282	274	273	261	248	235	219	203	185	167	147
O-7	255	248	239	229	218	206	192	178	163	146	129
O-6	196	189	194	185	176	167	167	156	143	129	114
O-5	177	172	171	164	156	147	138	127	117	105	93
O-4	153	148	143	137	130	123	115	107	97	88	78
Age at Retirement	43	44	45	46	47	48	49	50	51	52	53
Years to Mortality	29.5	28.6	27.8	26.9	26.1	25.3	24.4	23.6	22.8	22.0	21.2
Age at Mortality	72.5	72.6	72.8	72.9	73.1	73.3	73.4	73.6	73.8	74	74.2

TABLE VI

PRESENT VALUE OF CUMULATIVE RETIRED PAY
(IN THOUSANDS OF DOLLARS)

Computed at 20 Years | 8% Discount Rate

GRADE	YEARS OF ACTIVE DUTY SERVICE 20	21	22	23	24	25	26	27	28	29	30
O-8	207	197	193	182	171	159	146	134	121	108	94
O-7	187	179	169	160	150	139	128	117	106	94	83
O-6	144	137	137	129	121	113	111	103	93	83	73
O-5	130	124	121	114	107	100	92	84	76	68	59
O-4	112	107	102	96	90	83	77	70	64	57	50
Age at Retirement	43	44	45	46	47	48	49	50	51	52	53
Years to Mortality	29.5	28.6	27.8	26.9	26.1	25.3	24.4	23.6	22.8	22.0	21.2
Age at Mortality	72.5	72.6	72.8	72.9	73.1	73.3	73.4	73.6	73.8	74	74.2

rates are the only rates which may be applied. On the contrary, the discount rate which should be applied is the personal discount rate which pertains to the individual for whom the analysis is being performed. The authors could not perform computations for all rates of interest/discount, and therefore for all persons, thus only the two presented were used. They will also be used for all present value computations throughout this chapter.

Upon inspection of Tables V and VI, it is immediately obvious that consideration of the time value of money can significantly alter the cumulative value of a lifetime of retired pay. Not only are the total values changed to a much lower amount, they also decrease with an increase in time.

Tables V and VI are designed such that they portray the present value of a future series of payments at twenty years of military service. For example, after completion of 20 years of active service, an O-6 who contemplated retirement at that point can see that (at a discount rate of 5%), his future retirement pay checks of $1,057 per month for the next 29.5 years (354 months), are worth $196,000 now. If the same O-6 were to remain on active duty until completion of 30 years, he could see that the pay to be received from age 53 to death at age 74.2, a total of 21.2 years, is worth $114,000 at the 20 year point. The present value of the retirement pay of an O-6 at the completion of 20 years of active service is worth more than after the completion of 30 years service essentially because there are ten years between the two retirement points - the time value of money.

When we considered Table IV, it seemed reasonable for an O-6 who remained on active duty for 25 years to remain for one more, or a total of 26 years. In this manner his cumulative lifetime income would increase by over $30,000. Observing Table IV it appears that this is no longer the case as the move from 25 to 26 years results in no change. Perhaps a more significant point is the $9,000 drop which occurs between 24 and 25 years and the $11,000 drop between 26 and 27 years. Note also the increase for the O-6 when moving from 21 to 22 years - again the longevity pay increases are obvious.

The present value considerations of Tables V and VI are interesting to look at and compare but they are still just another way of looking at the financial situation of retirement. These presentations are useful but by no means complete. A military officer could not hope to make a rational decision regarding the best time to retire merely by studying these tables - yet some officers may make that very decision on less information. In order to make an intelligent decision, still other factors must be considered.

H. ADDITIONAL SOURCES OF INCOME

In addition to the income an officer could expect as a result of his monthly retirement check, there are other potential sources of income. These additional sources of income must also be investigated. What are they and what magnitude of income contribution can a retired officer expect from them? The following discussion serves to point out some of these potential sources.

I. CIVILIAN EMPLOYMENT

After the income resulting from the actual retirement pay check, the first other source one considers will probably be that of civilian employment. Several questions could be raised at this point. What kind of employment does the retiree want? What is he qualified to do? What chances does he have of getting the job he wants? What will various jobs pay? The first three questions are all addressed in a later chapter. We will concern ourselves here only with the last question, that which concerns how much income a retired officer can expect to receive as a result of a civilian job.

It would be ideal if we were able to state emphatically that given certain conditions of education, age, etc., one could expect 'x' pay from 'y' job in retirement year 'z'. This, of course, is not the case and any attempt at such a prediction would be less than creditable. This is not to say that it is impossible to arrive at some approximations that are reasonably acceptable given the degree of uncertainty with which we all must live and an awareness of the limitations inherent in such predictions. That is, we can make certain predictions as to what a retired military officer could expect to earn in a given situation, and, even though these predictions will not be entirely valid, they will provide useful information in the form of at least relative figures that can be used for comparison and demonstration.

In a search of the normal sources of information the authors could find no useful statistics regarding the salaries retired military officers could expect in a second career.

Figures are available giving the average salaries for all retired officers working at second careers but such figures grouped all officers into one category and failed to provide the detailed information required for this thesis.

As previously pointed out, the authors were constrained by time and were thus not able to conduct a survey of retired naval officers in order to gain the required information. It was therefore necessary to rely on information provided by a supposedly valid but dated source.

A group from Stanford University headed by Allen J. Lenz, than a Lieutenant Commander in the Navy Supply Corps, conducted a survey of considerable magnitude in 1966. The survey covered a sample population of about 6,500 officers. The survey was conducted such that the results were considered representative. [Lenz, 1968]

Lenz found indications that the probability of receiving a job decreases as retirement age increases. He also found that the second career income of personnel retiring in their mid-forties was significantly higher than those officers retiring after age fifty. [lenz, 1967] In general, Lenz established a relationship between military retirement age and second career incomes. He also demonstrated that income resulting from civilian second careers tends to decrease as retirement age increases. [Lenz, 1968]

The figures collected and utilized by Lenz in his dissertation were determined to be suitable for use as a basis for second career income figures required for this thesis. The figures extracted from the Lenz dissertation are given in Table

VII. They represent average civilian second career incomes for officers of grades O-5 and O-6 who earned a Master's Degree prior to retirement. Notice the decrease in reported income with the increase in age at retirement.

In order for the Lenz figures to be useful to the authors, some adjustment was necessary to account for the time span between 1967 and the present. A study was made of various employment categories thought to represent a reasonable cross section of jobs retired military officers could expect. These jobs included those in the fields of accounting, buyers, managers, job analysts, personnel directors, engineers, and clerical workers.

The statistical abstract of the U.S. for 1970 and 1975 provided percentage increases in average salaries per year for the jobs previously mentioned. The average current dollar increase in salaries for those jobs from 1966 to 1974 was found to be 45.5%. [U.S. Statistical Abstract, 1970, p. 234; 1975, p. 365] This percentage increase was then applied to those figures extracted from the Lenz dissertation thereby inflating the 1966 figures to more current (1974) expectations. These figures are given in Table VIII.

Although the methods used to arrive at the contents of Table VIII preclude any real degree of accuracy, they are still very useful in that they do provide an idea of what a retiring officer might expect to receive as a second career income. They are considered more useful than figures depicting average wages for civilian jobs because retired military officers who obtain second career employment traditionally do

TABLE VII

AVERAGE ANNUAL INCOME BY RETIREMENT AGE AND GRADE (1966 SURVEY)						
GRADE	RETIREMENT AGE LESS THAN 44	44-45	46-47	48-49	50-51	52-53
O-6	$20,270	$17,640	$15,670	$14,260	$12,230	$12,490
O-5	15,720	14,350	13,630	11,880	12,080	11,250

SOURCE: Allen J. Lenz, Military Retirement and Income Maximization: An Examination of the Economic Incentives to Extended Military Service, 1967, Table 4-3, p. 83.

TABLE VIII

ESTIMATED SECOND CAREER AVERAGE MONTHLY INCOME BY RETIREMENT AGE AND YEARS OF SERVICE											
GRADE	20	21	22	23	24	25	26	27	28	29	30
O-6	$2,458	$2,139	$2,139	$1,900	$1,900	$1,729	$1,729	$1,483	$1,483	$1,514	$1,514
O-5	$1,906	$1,740	$1,740	$1,652	$1,652	$1,440	$1,440	$1,465	$1,465	$1,364	$1,364
Age at Retirement	43	44	45	46	47	48	49	50	51	52	53

SOURCE: Estimated from Lenz, Table 4-3, p. 83.

not obtain the same income level in those jobs as civilians who have had the same types of jobs for many years.

The authors assumed the figures from Table VIII are representative of what a retired military officer could reasonably expect to receive as a second career income. We thus have another potential source of income which may be considered by those officers contemplating retirement.

If the potential retiree considers the phenomenon of decreasing second career income with increasing age, in conjunction with increasing retired pay resulting from additional years of active duty service, he may realize he is faced with a trade off. Is it better to retire early and possibly obtain a higher paying second career job, or is it better to retire later and accept a lower paying second career job while collecting a larger retired pay check?

The answer to this question is, of course, determined by the goals the individual officer is seeking to reach through such a decision. If he is concerned with maximizing his total future income stream, his answer would no doubt be different than if he were attempting to accomplish some other goal. A look at this question from a financial point of view of the total future income stream is presented at a later point in this chapter.

J. OTHER SOURCES OF INCOME

In addition to the income resulting from the employment one might find in the civilian community, there are other potential sources of income. Savings accounts, mutual funds,

stocks, bonds, and real estate are some of the more common type of income-producing investments. If the potential retiree has carefully planned his investments over his active duty career, and if he is fortunate, it is entirely possible to accumulate a sizeable estate by the date of retirement.

As an example consider an aviator who had just met his first "gate" thereby drawing $245 per month flight pay. If he were to invest that flight pay every month at 7% interest (a yearly interest currently being paid by some Federal Credit Unions), he could accumulate over $69,000 in fourteen[2] years. At 7% interest the principal would increase by $4,830 per year ($402.50 per month). This means if an aviator had a tax rate of 25%, he could feasibly retire after 20 years and receive an additional $302 per month from the interest on his savings account <u>without</u> touching the principal.

Such tenacity applied to savings or other investment plans is unusual but the point is made that careful planning and possibly some sacrifice during one's active duty career can pay out sizeable dividends during retirement. These dividends could be especially useful considering the impact they could have on second career income requirements necessary to maintain a given standard of living.

The decision to save or spend one's flight pay is an individual decision. Some aviators would rather have $245

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[2]For simplicity the assumption is made here that the $245 is invested and compounded to $69,000 before tax.

per month to spend every month rather than save for some date in the uncertain future. As we have learned, the time value of money is an important consideration.

An important point can be made regarding such investments and the resulting income. The point is: even if the retired service man should happen to die, these sources of income are still available! This is not so with a second career and the income associated with it. If the retiree dies, his family will lose any income resulting from his employment unless specific provisions to the contrary are in affect.

K. FINANCIAL PROTECTION

This particular line of thought brings us to another financial consideration - that of life insurance and other annuities. One may or may not believe in the usefulness or overall concept of life insurance and this is certainly not an attempt to sway anybody's opinion one way or another. Life insurance does, however, have an important role in the financial planning of many military families and it therefore deserves consideration here as it pertains to the potential retiree. Every military member is authorized life insurance up to $20,000 under the Servicemen's Group Life Insurance Program (SGLI). This coverage is provided at a cost to the member of $3.55 per month and is automatic unless a lesser amount of coverage is designated by the member in writing.

L. SURVIVORS' BENEFITS

Another type of coverage afforded the beneficiaries of the military man is through the survivors' benefits provided

by Social Security. This is not really an insurance plan and it is provided at no additional cost to the serviceman. It has a place in this discussion because it provides a potential income to the military man's family if he dies while on active duty.

Income to beneficiaries under this plan can amount to a current maximum of $915 per month for a widow with two or more children. These benefits are terminated when the youngest child reaches age 18 if the widow is under age 60. When the widow reaches age 60, she becomes eligible for monthly payments for life.

M. DEPENDENCY AND INDEMNITY COMPENSATION

In addition to benefits provided by Social Security, the serviceman's widow and children may also have benefits available to them through the Veterans' Administration. In December of 1969 Dependency and Indemnity Compensation (DIC) went into effect. DIC is based on pay grade and is paid to the eligible unremarried widow when death occurs while on active duty as a result of disease or injury which was incurred while on active duty.

DIC varies from $304 per month for an O-1 to $615 per month for an O-10. For each child under the age of eighteen the monthly DIC may be increased by $29 per child. Additionally, DIC may be increased by $62 per month for each child of age 18-23 attending a school or college approved by the V.A.

The significance of these three potential sources of income is that they are no longer available when the serviceman

retires. It then becomes an issue that perhaps the retiree should plan for the loss of these protection plans prior to retirement in order to provide some means of protection after retirement. He may wish to enroll in the Survivors' Benefit Plan or purchase life insurance, or both.

Assuming that an officer believes in life insurance, has a desire to provide this type of financial protection for his family, and would purchase protection of this type after retirement, we may develop a point worthy of further study. The officer, who voluntarily retires at any time prior to the maximum time he is eligible to remain on active duty, must pay out of his pocket for that protection he could otherwise have had at no additional cost had he remained on active duty for the maximum permissible number of years. As an example, consider a Commander who retires after completion of 20 years when he could have remained on active duty until at least 26 years. Such a Commander has six years during which he must pay for protection. This could be especially significant in the case of benefits provided through Social Security and DIC because the cost of an insurance program capable of paying out comparable sums of money would be substantial.

Here again we have a decision completely dependent on the individual's point of view. Those who favor the idea of life insurance and the protection it can afford may be well advised to consider its total aspects and to give sufficient thought to the position it occupies among the financial factors. Those who do not favor life insurance or have no intention of making any such related plans prior to and for retirement need

not consider it as a financial factor in the retirement decision. One should be aware, however, of the potential results of either decision to buy or not buy life insurance. There is a risk that the retiree may die prematurely with an associated impact on his family. Whether or not the retiree chooses to acknowledge that risk in no way changes it; the risk is the same in either case.

Those who wish to further research the area of life insurance and related annuity plans are invited to examine a thesis by Morris C. Johnson, Family Financial Protection for a Retiring Member of a Uniformed Service. [Johnson, 1971] In this thesis Johnson gives complete consideration to all types of insurance and annuities and how they relate to the retiring military man.

N. EXPENSES

The personal financial situation relates not only to sources of income but to expenses as well. In addition to the normal expenses one expects as a result of everyday living, there are certain other expenses that are particularly applicable to the potential military retiree and they will be the subject of the following discussion.

O. EDUCATIONAL COSTS

One such expense is that of educational costs, not only for the retiring officer's children, but possibly for the retiring officer himself.

The retiring officer could possibly pursue an advanced degree after retirement to make himself more attractive to potential employers, to get a higher paying job, or both.

Assuming one desires the advanced degree, it appears that it may be better to get it prior to retirement. This is because one may get the opportunity to gain experience in the particular field of the advanced degree while still on active duty and thus improve retirement job opportunities or secure a better wage. Also, if an officer must pursue an advanced degree after retirement, he may be forced to do so without the benefit of a civilian job. That is, he may be receiving his advanced education during a period of decreased income (retirement without supplementary income) when he could possibly have earned the degree while on active duty, thus allowing himself to participate in the job market immediately after retirement.

The tuition cost of graduate education will vary with the graduate school attended. Private institutions are naturally more expensive than public institutions. Fees required to attend the University of California, Santa Barbara, for example, would be approximately $250 per quarter for a resident of California and $750 for a non-resident. This cost would, of course, be partially offset by an Veterans' Administration benefits. In the case of a veteran with three dependents, the benefits would amount to over $360 per month.

Educational costs associated with the procurement of college degrees for one's children can be of near-heroic proportions. Admittedly, those costs will still be present whether on active duty or retired. The difference is these costs usually begin to occur around the twenty year point when one is first eligible to retire. The retired officer may

not have an income sufficient to cover these costs whereas the officer still on active duty might well be able to do so. The difference, although of little consideration to the retiree who is assured an income after retirement equal to or greater than that available while on active duty, is certainly important to the retired officer who has no such assurance. The retiring officer who is without this assurance may be forced to remain on active duty in order to afford these costs. If an officer has already retired, he may have to deny his children an education at an expensive school they really wanted to attend. The possibility also exists that he may have to deny them educational support altogether.

Perhaps an even more interesting point is that an officer may anticipate such great educational costs that it is necessary to retire in order to find a very high paying civilian job to meet these costs. Thinking along these lines will depend on the anticipated costs to educate one's children and the prospects of securing such a job.

Table IX provides projections of educational costs for the years 1976-1981. It can be seen that the projected costs for four year public universities for the years 1976 and 1977 are approximately $1,900 per year. For the same time frame the cost of non-public four year universities is approximately $4,200 per year. If an officer had two children spaced four years apart and he wanted to provide each of them with four years of college at a public four year university, the total cost could well exceed $16,000, an average expense of over $2,000 per year. If an officer had two children in college at

TABLE IX

INSTITUTIONS OF HIGHER LEARNING - AVERAGE PROJECTED COSTS 1976-1981 ($ PER YEAR)

YEAR AND ITEM	TUTIONS AND FEES				BOARD				DORMITORY ROOMS			
	ALL INSTITU-TIONS	TWO YEAR	FOUR YEAR		ALL INSTITU-TIONS	TWO YEAR	FOUR YEAR		ALL INSTITU-TIONS	TWO YEAR	FOUR YEAR	
			UNIVERSITY	OTHER			UNIVERSITY	OTHER			UNIVERSITY	OTHER
1976-77 Public	$ 476	$ 276	$ 690	$ 447	$617	$611	$658	$573	$544	$518	$585	$518
Non-Public	2,369	1,564	2,752	2,272	671	641	747	641	610	603	702	565
1977-78 Public	475	287	709	457	617	616	658	573	555	539	597	531
Non-Public	2,430	1,611	2,819	2,336	671	641	747	641	620	622	712	575
1980-81 Public	499	322	765	484	617	632	658	573	589	601	633	571
Non-Public	2,613	1,752	3,020	2,528	671	641	747	641	650	678	742	604

SOURCE: U.S. National Center for Educational Statistics, Digest of Educational Statistics, 1974 Edition.

the same time, the cost of over $4,000 per year could prove to be rather formidable.

Given costs such as these it is easy to see why the military officer must carefully consider how education plans fit into the personal financial situation and how these plans will influence his retirement decision.

P. LOCATIONAL EXPENSES

Another category of expense that can be associated with retirement is that of locational expense. Upon retirement the retiree must make the choice of where he wishes to make his home. If the area he chooses is not located near a military installation, he may incur expenses resulting from a loss of opportunity to utilize commissary and exchange facilities. It is possible for the loss of these privileges to cause food expenses to increase by as much as 20% and consumer goods expense to increase by as much as 10% to 30%. [Martin Binkin, p. 11] This could be a significant amount to a retiree even if he were able to find civilian employment which produced an income sufficient to raise his total income to a level equal to his previous active duty income.

If a retiree had a choice of two civilian jobs, one within shopping distance of a military installation and one not, acceptance of the latter job would require a higher wage than the former in order to account for the increased cost of food and consumer goods expenses. Regardless of where one decides to retire, it is necessary to remember that any location which does not afford access to a military installation is probably

going to result in increased expenses during a time when they may not be especially tolerable.

Q. HOUSING EXPENSES

There are some expenses related to retirement that may or may not exist while on active duty. One such expense is that of a home itself. It is possible that a military officer and his family lived in government housing during the majority of the time (if not the entire time) the officer was on active duty. It is further possible that this family never owned a house and consequently never had to make house payments. If this is the case, the transition from housing provided in lieu of BAQ payments to that of house payments and the possibility of a sizeable down payment could be quite traumatic.

R. TOTAL FUTURE INCOME STREAM

Thus far we have discussed potential incomes and expenses that could be expected in the retirement situation. Let us now consider just two methods by which the potential retiree could view the income associated with retirement from a more complex vantage point. The authors decided to investigate what the potential retiree could expect in the way of total future income resulting from a combination of active duty pay, military retired pay, second career pay, and second career retired pay. In this manner we could evaluate the total future income stream a naval officer could reasonably expect from the point of first eligibility for retirement (twenty years) until death. The potential retiree could then look into the future from the twenty year point and see more clearly the

apparent financial results of a decision to remain on active duty or to retire at yearly intervals from 20 through 30 years of service.

In order to determine this total future income stream a present value model was constructed such that the present value of the Total Future Income Stream (PVTFIS) equals the Present Value of Active duty Pay (PVAD), plus the Present Value of the Military Retired Pay (PVMRP), plus the Present Value of the Second Career Pay (PVSCP), plus the Present Value of the Second Career Retired Pay (PVSCRP). In equation form the model is presented as such:

$$PVTFIS = PV_{AD} + PV_{MRP} + PV_{SCP} + PV_{SCRP}.$$

A more complete mathematical presentation and explanation of the model and its components is given in Appendix A.

The basic amounts that were used for the four forms of pay were developed from sources already mentioned. Active duty pay and military retired pay were taken from respective 1 October 1975 pay scales and the second career pay was taken from Table VIII. The retired pay resulting from second career income was determined from the second career income in a manner suggested by Lenz, where

> Annual Civilian Employment Retirement Benefit = current annual income X(.01) X numbers of years in civilian employment. [Lenz, p. 72]

This is a typical type of formula often used to estimate retirement benefits, and, even though it precludes a high degree of accuracy, it will serve to furnish an approximation of the

retirement benefits required for this thesis. The results of the computation of second career retired pay is presented in Table X.

The PVTFIS was computed only for the grades of O-5 and O-6 as these two ranks provide a sufficient basis for comparison. Tables XI and XII present the PVTFIS at discount rates of 5% and 8%.

These two tables provide a means of viewing what a potential retiree could expect his PVTFIS to be given the assumptions of the constituent pay amounts. With these assumptions in mind, an observation of the two tables shows that for both grades and both discount rates retirement immediately following the completion of twenty years of active duty service provides the highest PVTFIS and that it decreases every year with the exception of years 22 and 26 for the O-6 at 8%. The prospect of early retirement with a correspondent greater second career income appears to provide a greater PVTFIS than does retirement in later years. The greater second career income received, if early retirement is elected, appears to have a greater influence on the PVTFIS than does the larger retired pay check associated with later retirement.

Other observations can be made. For example, an O-6 using the 5% discount rate might express indifference between 25 and 26 years. Here again the large active duty pay increases for the O-6 at year 22 and year 26 have a pronounced effect on the total PVTFIS. The O-5 would experience the same type of indifference between years 21 and 22. If an O-5 wanted to remain on active duty until at least 21 years of active service were

TABLE X

MONTHLY RETIRED PAY RESULTING FROM SECOND CAREER INCOME (ESTIMATED FROM TABLE VIII)											
	YEARS OF SERVICE										
GRADE	20	21	22	23	24	25	26	27	28	29	30
O-6	$541	$449	$428	$361	$342	$294	$277	$222	$208	$197	$182
O-5	419	365	348	314	297	245	230	220	205	177	164

TABLE XI

		20	21	22	23	24	25	26	27	28	29	30
	AP	$ 29	$ 59	$ 86	$112	$137	$172	$196	$219	$240	$261	$281
O	MRP	196	189	194	185	176	167	167	156	143	129	114
/	SCP	394	309	276	216	188	146	121	83	62	42	21
6	SCRP	14	12	12	11	11	10	10	9	9	9	9
	TOTAL	631	569	568	524	512	495	494	467	454	441	425
	AP	26	51	77	100	122	143	163	182	200	217	233
O	MRP	177	172	171	164	156	147	138	127	117	105	93
/	SCP	305	251	224	188	163	121	101	82	61	38	19
5	SCRP	10	10	10	10	10	9	8	8	8	8	8
	TOTAL	518	484	482	462	451	420	410	399	386	368	353

PRESENT VALUE OF TOTAL FUTURE INCOME STREAM AT COMPLETION OF 20 YEARS OF SERVICE (IN THOUSANDS OF DOLLARS) 5% DISCOUNT RATE — YEARS OF SERVICE

TABLE XII

PRESENT VALUE OF TOTAL FUTURE INCOME STREAM
AT COMPLETION OF 20 YEARS OF SERVICE
(IN THOUSANDS OF DOLLARS)
8% DISCOUNT RATE

		YEARS OF SERVICE										
		20	21	22	23	24	25	26	27	28	29	30
	AP	$ 28	$ 54	$ 82	$106	$127	$147	$178	$196	$213	$228	$243
0	MRP	144	137	137	129	121	113	111	103	93	83	73
/	SCP	305	236	209	162	139	107	88	60	45	30	15
6	SCRP	6	6	6	6	6	5	6	5	5	5	5
	TOTAL	483	433	434	403	393	372	383	364	356	346	336
	AP	26	49	74	94	114	131	148	163	177	190	202
0	MRP	130	124	121	114	107	100	92	84	76	68	59
/	SCP	237	192	170	141	121	89	74	59	44	27	14
5	SCRP	5	5	5	5	5	5	5	5	5	5	5
	TOTAL	398	370	370	354	347	325	319	311	302	290	280

complete in order to see if he would be promoted to O-6, he could just as well wait until 22 years were completed. This is because the slight decrease ($2,000) associated with remaining for the extra year might possibly be warranted considering the possibility of promotion to O-6 and therefore an opportunity to retire later with a higher PVTFIS. For an example of how this can be treated, see Appendix B.

The 8% table is rather interesting in that it demonstrates higher discount rate results in overall lower total figures for both grades but an increase in PVTFIS for the O-6 at year 22 and 26. An O-6 utilizing an 8% discount rate might therefore require substantial motivation to keep him from remaining until the completion of 26 years because in this case one additional year brings him an additional $11,000.

Tables XI and XII can be useful as a means of approaching the trade off decision previously mentioned or as a means of moving toward achieving a maximum PVTFIS. There exists, however, yet another means the authors decided to employ in exploring the personal financial situation.

S. THE HALF PAY FALLACY

One occasionally hears fellow officers state that if an officer remains on active duty past twenty years he is in effect working for half pay because he could retire and draw half pay. This is, of course, absurd; because, first of all, when an officer retires, he does so at one-half base, not total pay. Secondly, this type of logic does not account for the opportunity cost of the lost benefits in the form of

greater retired pay which could result from increased service should the officer elect to retire at some future time in excess of 20 years.

It is also true that by remaining on active duty a naval officer loses an opportunity to earn a civilian pay potentially of high value. The method employed by the authors seeks to resolve these two separate and distinct opportunity losses and to provide a means of determining what second career income would be required to produce indifference regarding the decision to retire at an early vs. later time.

Specifically, we sought to determine how much an officer who retires prior to a potential later retirement date must make in civilian employment in order to make up for the lost retirement benefits he would be able to claim had he remained on active duty. The period of time to be allowed for this recoupment would be that period of time between the two retirement points in question. Tables XIII and XIV present the results of our analysis which was performed in the following manner.

Grade and years of service combinations were chosen which represented points a potential retiree would likely consider for comparison. Next, the difference in retired pays resulting from the two different retirement points was determined. This amount is given as column (g). This difference was then considered as an annuity over the number of years it would be received (from the late retirement point until death) and the present value of this annuity at the late retirement point was determined (i). This present value is the amount required

TABLE XIII

SECOND CAREER INCOME REQUIRED TO PRODUCE INDIFFERENCE BETWEEN EARLY AND LATE RETIREMENT
DISCOUNT RATE: 5%
ALL FIGURES ARE IN DOLLARS PER MONTH.

Grade/Years vs Grade/Years	Average active duty pay for late retiree	Retired pay for late retiree	Retired pay for early retiree	Difference in pay (a) - (b)	Average tax advantage of late retiree	SCP required to allow retiree to maintain same std of living as late ret.	Difference in retired pay (c) - (b)	Number of months difference is received by late retiree	Present value of difference in retired pay	Rents required to produce (i) in # of months between retirement points	Before tax income required to produce (j)	Monthly second career income required to achieve indifference	Yearly second career income required and # of years ( )	
	a	b	c	d	e	f	g	h	i	j	k	l	m	
CDR/20 vs CDR/22	2,231	956	1,088	1,275	89	1,364	132	Mo. 333.6	23,789	942	1,308	2,672	32,064	(2)
CDR/20 vs CDR/24	2,265	956	1,187	1,309	89	1,398	231	313.2	40,406	760	1,056	2,454	29,448	(4)
CDR/20 vs CDR/26	2,276	956	1,286	1,320	89	1,409	330	292.8	55,818	665	924	2,333	27,996	(6)
CDR/20 vs CAPT/24	2,404	956	1,342	1,448	99	1,547	386	313.2	67,519	1,271	1,816	3,363	40,356	(4)
CDR/20 vs CAPT/26	2,461	956	1,557	1,505	102	1,607	601	292.8	101,656	1,210	1,754	3,361	40,332	(6)
CDR/20 vs CAPT/30	2,583	956	1,820	1,627	103	1,730	864	254.4	135,519	870	1,261	2,991	35,892	(10)
CDR/22 vs CDR/24	2,298	1,088	1,187	1,210	89	1,299	99	313.2	17,317	686	953	2,252	27,024	(2)
CDR/22 vs CDR/26	2,298	1,088	1,286	1,210	89	1,299	198	292.8	33,491	630	875	2,174	26,088	(4)
CDR/22 vs CAPT/26	2,437	1,088	1,557	1,349	99	1,448	469	292.8	79,329	1,493	2,133	3,581	42,972	(4)
CDR/22 vs CAPT/30	2,601	1,088	1,820	1,513	104	1,617	732	254.4	114,815	973	1,431	3,048	36,576	(8)
CDR/24 vs CDR/26	2,298	1,187	1,286	1,111	89	1,200	99	292.8	16,745	663	921	2,121	25,452	(2)
CAPT/24 vs CAPT/26	2,576	1,342	1,557	1,234	104	1,338	215	292.8	36,366	1,441	2,119	3,457	41,484	(2)
CAPT/24 vs CAPT/30	2,702	1,342	1,820	1,360	104	1,464	478	254.4	74,975	893	1,313	2,777	33,324	(6)
CAPT/26 vs CAPT/30	2,765	1,557	1,820	1,208	104	1,312	263	254.4	41,252	776	1,141	2,453	29,436	(4)

TABLE XIV

SECOND CAREER INCOME REQUIRED TO PRODUCE INDIFFERENCE BETWEEN EARLY AND LATE RETIREMENT
DISCOUNT RATE: 8%
ALL FIGURES ARE IN DOLLARS PER MONTH.

Grade/Years vs Grade/Years	Average active duty pay for late retiree	Retired pay for early retiree	Retired pay for late retiree	Difference in pay (a) - (b)	Average tax advantage of late retiree	SCP required to allow retiree to maintain same std of living as late ret.	Difference in retired pay (c) - (b)	Number of months difference is received by late retiree	Present value of difference in retired pay	Rents required to produce (i) in # of months between retirement points	Before tax income required to produce (j)	Monthly second career income required to achieve indifference	Yearly second career income required and # of years ( )	
	a	b	c	d	e	f	g	h	i	j	k	l	m	
CDR/20 vs CDR/22	2,231	956	1,088	1,275	89	1,364	132	Mo. 333.6	17,658	678	942	2,306	27,672	(2)
CDR/20 vs CDR/24	2,265	956	1,187	1,309	89	1,398	231	313.2	30,356	537	746	2,144	25,728	(4)
CDR/20 vs CDR/26	2,276	956	1,286	1,320	89	1,409	330	292.8	42,472	460	639	2,048	24,576	(6)
CDR/20 vs CAPT/24	2,404	956	1,342	1,448	99	1,547	386	313.2	50,724	897	1,281	2,828	33,936	(4)
CDR/20 vs CAPT/26	2,461	956	1,557	1,505	102	1,607	601	292.8	77,350	837	1,213	2,820	33,840	(6)
CDR/20 vs CAPT/30	2,583	956	1,820	1,627	103	1,730	864	254.4	105,829	576	835	2,565	30,780	(10)
CDR/22 vs CDR/24	2,298	1,088	1,187	1,210	89	1,299	99	313.2	13,010	500	694	1,993	23,916	(2)
CDR/22 vs CDR/26	2,298	1,088	1,286	1,210	89	1,299	198	292.8	25,483	450	625	1,924	23,088	(4)
CDR/22 vs CAPT/26	2,437	1,088	1,557	1,349	99	1,448	469	292.8	60,361	1,067	1,524	2,972	35,664	(4)
CDR/22 vs CAPT/30	2,601	1,088	1,820	1,513	104	1,617	732	254.4	89,661	667	981	2,598	31,176	(8)
CDR/24 vs CDR/26	2,298	1,187	1,286	1,111	89	1,200	99	292.8	12,741	490	681	1,881	22,572	(2)
CAPT/24 vs CAPT/26	2,576	1,342	1,557	1,234	104	1,338	215	292.8	27,671	1,063	1,563	2,901	34,812	(4)
CAPT/24 vs CAPT/30	2,702	1,342	1,820	1,360	104	1,464	478	254.4	58,549	634	932	2,396	28,752	(6)
CAPT/26 vs CAPT/30	2,765	1,557	1,820	1,208	104	1,312	263	254.4	32,214	569	837	2,149	25,788	(4)

to pay out an annuity equal to column (g) for the number of months from the late retirement point until death (h). If the early retiree had saved the amount in (i) over the period of time between the two retirement points, he could then collect a monthly amount equal to that amount he had foregone by virtue of his early retirement.

To determine the monthly amount needed to be invested at 5% and 8% over the difference in retirement points in order to accumulate an amount equal to (i), a future value of an annuity formula was used. This amount is given as column (j) and as column (k) before tax.

Column (k) was then added to (f), the amount required to bring the retiree up to the income level he would have maintained had he not retired, and the total monthly income required to recoup the retired pay lost as a result of early retirement was the sum (l).

A good working example is Table XIV for a Commander at 20 vs. a Commander at 26. If a Commander were to retire at 20 years of service rather than his maximum allowable active duty time of 26 years (assuming he fails promotion to O-6), he would have to save $460 per month for 6 years (72 months). This amount would have to be continuously compounded at an interest rate of 8% in order to accumulate a sufficient amount which could be paid out for 292.8 months (24.4) years at the rate of $330 per month. ($330 per month is the additional retired pay an O-5 who retires at 26 years receives.)

To save this the $460 per month, while maintaining an income equal to that which he could have made had he remained

on active duty, requires that he have an income source (second career employment) in addition to his monthly retirement check which provides a minimum of $2,048 per month ($24,576 per year).

If the O-5 in question could find such a second career job, and if he could save the amount required, he could make up for the retired pay lost because of his early retirement in 6 years. If he could find an income source of $24,576 per year in addition to his retired pay, he could be said to be financially indifferent to retiring or remaining on active duty when comparing retirement at 20 with 26 years.

This analysis produces some rather startling results when the required salaries are considered. Of course, some of the salaries are huge because of the very short time allowed to save the amounts required. On the other hand, some of the salaries are very formidable and the time allowed to save the amounts required to pay out the annuities are quite reasonable. It appears then, even with the time considerations, that the recoupment of lost pay due to early retirement requires a substantial source of second career income.

Early retirement appears to be a financially desirable situation when one recalls the PVTFIS analysis. The PVTFIS analysis demonstrates that a greater PVTFIS can be expected with early retirement <u>if</u> the early retiree can achieve a large second career income. The opportunity cost/indifference analysis supports the PVTFIS analysis in that it points out the large second career income required to retire early and

still maintain a future income as great as one who retires later.

These two analyses represent two different means of looking at the same thing. They both demonstrate that substantial second career incomes are required to make early retirement financially desirable. If the potential retiree cannot meet the second career income required to retire early and achieve indifference between early and late retirement, he should seriously consider retiring at a later date if the financial considerations are dominant.

One must remember that both of these last two methods of analysis are devices which can be utilized by the potential retiree as an aid to rational decision making. Neither analysis is correct or incorrect; they are but different methods of observing the same situation in hopes of greater understanding and intelligent decisions.

V. RETIREMENT ADJUSTMENT

Many officers are apprehensive at the prospect of retirement. Possibly they view it as the end of a life style they have known since maturity instead of viewing it as an opportunity to begin a new career in civilian life - which it really is for most officers. Unpleasant examples of adjustment problems and failures in retirement tend to increase consternation and uncertainty as the officer approaches the end of his military career. The thought of a sudden shift to uncertainty after years of status and prestige can be a tremendous shock to the officer prior to and immediately after retirement. D. D. Braginsky and B. M. Braginsky in studying the unemployed worker of all ages observed that, "The higher one's status and the more sudden one's fall, the greater the impact." [Braginsky and Braginsky, 1975, p. 70]

Early preparation and planning for retirement and the subsequent civilian career can remove much of the uncertainty and thus reduce the adjustment to civilian life. The retiree needs to recognize that his new status will present some significant psychological problems. In 1963, J. D. Goodchilds and E. E. Smith found that higher status men (equatable to career military officers) suffer more as the duration of inactivity and unemployment increase, growing more defensive, conformist and self-critical, and less outgoing, while lower status men (blue collar workers) adapt easier. [Braginsky and Braginsky, 1975] Other studies show the extra agony and the

rising bitterness that often ensue as the older worker attempts to find employment. The old adage that the first step in solving a problem is recognizing that it exists applies to the mid-career job change military retirement presents. To make a smooth transition into retirement and the civilian economy, the military officer must take periodic inventory of himself and identify those areas wherein problems exist or may develop. [Kelly, 1961] Advance planning will remove or reduce the shock and surprises inherent in military retirement.

Retirement after twenty to thirty years of military service into the relatively unknown civilian world is for many, in effect, a "change of life." Often a situation termed "role confusion" arises which may be manifested by irritability, depression, lack of energy, apathy, increased alcohol intake, and other heretofore unknown symptoms in the retiree. [Ewing, 1975] The naval officer has been accustomed to clearly defined roles governed by rank and billet. He has filled these roles essentially twenty-four hours a day for the past twenty plus years. As an example, take the Navy Commander who is a major department or branch head of a large operational staff and is deeply involved in the formulation of long range and day-to-day policy. His rank, position, and experience make his advice and counseling highly sought after. His decisions and instructions to subordinates are quickly and efficiently implemented. He has frequent contact with the highest levels of command. Suddenly, his retirement day arrives, and not only is he no longer involved in policy making, but he is unaware of the eventual policy - he is on the outside

looking in! Essentially, he now must assimilate into an entirely new society.

Upon retirement much of the certainty of his identity disappears, especially as he observes the minimal carry-over of his role and status to the civilian economy. He is confronted with a new vocabulary and new values. Translation of his military background into meaningful relevant terms for a prospective civilian employer can be mystifying. What type of occupation is he qualified for? How does he apply for a job? How does he write an effective resume? How should he negotiate for the salary he desires? How flexible should he be in seeking job location and responsibility? These decisions coupled with continuing financial and family pressures to maintain a particular standard of living often precipitate a phenomenon generally called "the Retirement Syndrome" by many military psychiatrists. [Youngpeters, 1974] The Retirement Syndrome, according to Dr. (COL) John S. McNeil, though characterized by general anxiety, depression, and irritability can be separated into three chronological phases. The first usually begins a few years before retirement and generally increases as retirement approaches. Pains with no physical basis may develop. When the day of retirement arrives, varying degrees of role confusion arise and may last for a year or more depending on the retiree and his success in finding satisfactory and personally rewarding employment. Finally comes the adjustment phase. The transition from a position of authority and status to that of just another employee at a time when his wife may be entering the menopausal period and

thus possibly uncertain of her future role. In addition, their children are often in the difficult teenage years. [Youngpeter, 1974] These factors can place a severe strain on the officer's family situation. This transition is especially difficult for the career military man in that he is making this career change in his mid-forties to early fifties when his civilian counterparts are approaching the zenith, not the end of their careers. A military career is quite different from that of a civilian when one compares the respective working environments. The non-regular working hours, frequent moves, regulated lifestyle and demands of a military career are foreign to most civilian middle management employees - especially in the ability or freedom to change jobs. Dr. McNeil indicates that the degree and rapidity of retirement adjustment depends on four factors: "Is he satisfied with his job? Is he satisfied with his retirement residence? Is he maintaining his accustomed standard of living? and, Is his family happy with his retirement?" [Ewing, 1975]

The consensus of how to ease the adjustment to retirement is to approach retirement not as the end of a way of life but as a new opportunity with careful, realistic preparation. Most military men and their families do make the transition to retirement without serious psychological problems, but the transition remains a cultural shock of varying degrees.

VI. GENERAL ECONOMIC CONDITIONS

Our economy is always in one phase or swing of a business cycle. Predicting future economic conditions or business cycle phases, however, is often next to impossible for the economist, let alone the average naval officer. The prospective retiree about to enter the civilian job market should be aware of a few basic economic indicators and how they could affect his post-retirement employment opportunities and thus his standard of living. On active duty, he is somewhat insulated from fluctuations of the economy as compared to his civilian counterpart in a middle management position. The officer's employment and salary are very secure and he can generally expect his pay to increase along with changes in the cost of living. The potential change in this stability warrants some thought by the officer prior to reaching the decision to retire. Rather than affect the decision of whether to retire or not, a review of some economic indicators would probably cause the officer to adjust the timing of his military retirement. He naturally would want to enter the civilian labor market at a time when economic conditions and the marketability of his individual skills will allow the highest possible chance of obtaining the civilian job necessary to meet his personal goals. In particular, the officer should carefully review the economic conditions in the area or areas where he plans to live or look for employment. Employment and price levels can vary greatly from one region of the

country to another. Some useful indicators of the potential employment climate are as follows.

A. GROSS NATIONAL PRODUCT (GNP)

A comprehensive measure of the nation's total output of goods and services in terms of their current dollar value. The GNP can be determined by summing all expenditures of currently produced goods and services or all incomes earned in producing these goods and services. [Dictionary of Economic Terms, 1973] The GNP is often viewed as a measure of the overall performance and health of the economy. The potential retiree should review the changes and growth rate of the GNP from year to year when corrected for price changes (inflation). The GNP reflects how much Americans produce for the market place, but not whether they are healthier or happier.

The GNP statistics are too macro in nature to provide the officer with a basis on which to make his retirement decision, but they can provide a measure of the economy's growth which can be compared to that needed to alleviate a particular economic problem. For example, by the current administration's own calculations, the economy must grow at a real rate of six percent per year for the next five years in order to produce enough jobs (more than two million per year) to absorb the new entrants into the labor force and reemploy those still jobless as a result of the recent (1973-75) economic recession. The situation is compounded by the necessity of the economy to generate more new jobs to maintain the current level of employment due to increasing productivity.

Productivity increases via more efficient use of labor, raw materials, and capital would raise unemployment and/or reduce the average work week if new labor demand were not generated. Since 1900, annual productivity increases have averaged 2% and 2.6% since 1940. [Bratt, 196; Business Conditions Digest, February 1976] The significant point in this discussion is that our economy has never sustained the growth or created the number of new jobs for such a long period in peacetime to reduce unemployment to the pre-recession level of 5%. [Business Week, March 22, 1976]

B. CONSUMER PRICE INDEX (CPI)

A monthly measure, compiled by the U.S. Bureau of Labor Statistics, of changes in the prices of goods and services consumed by urban families and individuals. The index includes a group of about 300 goods and services, ranging from food to automobiles and from rent to haircuts, normally purchased by urban wage earners and clerical consumers. [Dictionary of Economic Terms, 1973] Current prices, the CPI, are expressed in terms of a percentage of average prices during 1976 (the current base year). The CPI is often used as a basis in wage/salary negotiations and cost-of-living salary increases.

C. UNEMPLOYMENT

Increased unemployment generally results from a depression or recession period of the business cycle. Its immediate cause is usually a reduced demand for labor in a downward swing of the economy. [Dictionary of Economic Terms, 1973] Unemployment

is hard to predict due to its irregular occurrence and variation in intensity and duration. In short duration recessions, the lower-paid blue collar workers are the most affected by changes in unemployment; however, in the recent 1973-1975 recession considerable numbers of high-salaried professional white collar workers found themselves unemployed. This in turn severely reduces the employment opportunities for new workers entering the market such as military officer retirees. To trim two percentage points off the current unemployment rate by 1980 would require the creation of 12 million new jobs. [Business Week, March 22, 1976] What makes the current unemployment more stubborn than ever is its structure, with the heaviest concentration of unemployment among teenagers, minorities, and older workers. [Business Week, March 22, 1976] Monthly published data from the Bureau of Labor Statistics indicate the unemployment situation in specific occupations and sectors of the work force, along with the overall unemployment picture. [Council of Economic Advisors, 1973]

D. CORPORATE PROFITS

The amount left over after a business enterprise has paid all of its expenses. Profits vary from time to time, from company to company, and from industry to industry. [Dictionary of Economic Terms, 1973] Corporate profits are a good indicator of short-term economic health in that profits usually lead the economy. As profits rise, employment, income, and capital expenditures rise and the reverse is also true. Profits also should be viewed on a relative basis as compared to

previous years and corrected to constant dollar values (if necessary). The rate of change and direction of change are the important relevant indicators in viewing corporate profits, since as profits and orders increase, corporations hire more workers and increase productivity, or both.

E. ADDITIONAL INDICATORS

The following indicators, most of which are termed leading indicators since their upward and downward swings generally precede the peaks and troughs of the aggregate business activity, should also be reviewed: [Brennan, 1975; Business Conditions Digest, February 1976]

1. The average workweek of production workers (hours)
2. New orders for durable goods
3. Construction contracts
4. Manufacturers' new orders (capital goods industries)
5. New private housing units started
6. Changes in business inventories (value and number)
7. Industrial materials prices
8. Corporate net cash flows
9. Changes in the money supply
10. New business incorporations

The current statistics and estimates of the above indicators can be reviewed in publications such as the CPI Detailed Report published by the Bureau of Labor Statistics, monthly Economic Indicators prepared for the Joint Economic Committee by the Council of Economic Advisors, and the Wall Street Journal - all of which are available in most libraries.

Essentially what we are recommending is that the future retiree develop an understanding and awareness of the overall economic environment in the civilian sector, and particularly in those industries in which he has the best opportunities.

Inflation and increases in the cost-of-living can have some major effects other than employment opportunities on the retiree vs. the active duty officer. The availability of government living quarters and government paid utilities, which require only that the officer forfeit his quarters allowance, are prime examples of possible differences due to economic conditions. Recently inflation has had a profound effect on the cost of utilities and housing that the active duty officer living in quarters may not realize or appreciate when compared to what he would have to pay for similar services as a retiree. Currently military retirees are protected from the erosion of a fixed retirement income in contrast to most retirees in the civilian sector by an adjustment formula geared to increases in the CPI. Public Law 89-132, approved August 21, 1965, modified the retired pay adjustment formula to provide that, whenever the CPI rises by 3% over the CPI base month for three consecutive months, retired pay is adjusted to the highest percent of increase in that three month period. [Mackin, p. 154] Additionally, on 1 November 1969, Congress further modified the CPI adjustment by adding an additional one percent to each raise in federal/military retirement annuities. When enacted, this one percent adjustment (called "the one percent kicker") was to compensate for the time lag between CPI increases and the raises in retired pay

and it supposedly would permit retirees to share in the nation's rising standard of living. [Navy Times, 5 April 1976] This adjustment formula, and especially the one percent kicker, has come under heavy (governmental) criticism as being too expensive and tends to overcompensate for CPI changes. The prospective retiree should thoroughly investigate the effective retirement pay adjustment law prior to electing retirement.

VII. MARKETABLE SKILLS AND CIVILIAN EMPLOYMENT OPPORTUNITIES

Initially, it should be pointed out that there is a particular category of employment that should be considered potentially unattractive to retired military officers - that is, employment by the Federal Government. The Dual Compensation Act of 1964 established rules governing employment of retired members of the Armed Forces and limitations on retired pay received by retired officers employed by the Federal Government. Under this act, an officer retired from the regular component will receive full pay for his federal civilian employment; his retired pay, however, will be reduced to an annual rate equal to the first $2,000 of such pay plus one half of any exceeding $2,000. The first $2,000 of annual pay figure is adjusted upward with cost-of-living increases. As of 1 January 1976, the figure had risen to nearly $2,900. [Meyer, 1976] This reduction does not apply to temporary (30 days or less) employees.

A. ADVANCED DEGREES

Although the retired military officer has had years of practical management (command) experience, the prospective civilian employer often views him as having just returned from a sabbatical of twenty to thirty years, where his military experience is not particularly relevant to the job he is applying for. Often unable to compete in specific civilian management experience, the retiring officer must fall

back on the universally accepted qualifications of advanced education. Lenz concluded in his analysis that:

> 1. Second career income levels and employment rates increase with the educational level.
>
> 2. The second career income levels of advanced degree holders decline very rapidly with advancing retirement age until, at the later retirement ages, their advantage over bachelor's degree holders and non-degree holders is relatively small.
>
> 3. Career officers apparently do respond to economic incentives. The advanced degree holders tend to retire at earlier ages then do the bachelor's degree holders and non-degree holders. [Lenz, 1968]

In assessing Lenz's conclusions, there appeared to be a general lack of substantial financial incentive for officers to remain on active duty if they possessed an advanced degree in a field readily marketable in the civilian economy. In fact, he found that for some advanced degree holders, even a guarantee of one or two future promotions would not make continued military service financially attractive. [Lenz, 1968] LCDR Joseph J. Andrilla and LCDR Bernard J. McGee, in "A Study of the Monetary Value of the Master's Degree in Management Issued by the Naval Postgraduate School," completed in December 1970, found that a graduate degree would significantly enhance the employment ability of a retiree and would increase starting salaries from $1,000 to $5,000 annually. [Andrilla and McGee, 1970] Thus, in preparation for future civilian employment, having an advanced degree is a definite asset both in locating a job and in salary negotiations. Additionally, an advanced degree would allow the officer to serve in military billets in the particular field while on

active duty which would be a military career asset plus enhance the officer's expertise in the field before he begins his civilian career.

B. MILITARY EXPERIENCE TRANSLATION

Many military assignments and duties seem on the surface to bear little resemblance to occupations in the civilian market. The officer approaching possible retirement should allocate substantial off-duty time to analyze those fields in the civilian sector in which he feels most qualified and most interested. Seldom does someone else get anyone a job. An ex-officer will be hired based on what he has to offer his prospective employer and not on what military billets or rank he held. He is the only one who can demonstrate what he has to offer the civilian employer. A retiring officer has amassed considerable management, personnel, and often technical experience in his military career, regardless of career specialty whether or not he has had formal graduate education. Despite the fact that active duty billets and experiences differ greatly, they all involve management in varying degrees. Generally he has been exposed to many management techniques. In a managerial capacity, presidents of corporations, heads of government agencies, college administrators, and military commanders all perform the same basic functions of planning, organizing, commanding, coordinating, and controlling. [Hodgetts, 1971]

The officer studying his civilian employment prospects should develop an objective analysis of his military career

by component parts that relate to comparable civilian fields and jobs. He should then translate the military terminology into corresponding civilian terms in order to evaluate his marketability after retirement. For example, the officer who has commanded an aviation squadron or surface ship would likely translate his command function into management of resource technology and thus a close analogy understood by the civilian ėmployer. Imagination and forethought are the keys in translating military experience and being able to sell oneself in the private sector. Review of trade journals and the study of common problems in the civilian sector may generate interest in a particular field and lead to additional investigation of the prerequisites for employment. This in turn may cause the officer to plan a program of study including off-duty education to further enhance his marketability.

C. CIVILIAN EMPLOYER VIEW OF MILITARY RETIREES

Military retirees recently are finding themselves less and less in demand for jobs. Ahead of them are recent college graduates followed by men who already have some business experience. Admittedly, this is partially caused by high cyclical unemployment and the recession our economy has gone through in 1973-75. However, although ex-military officers are productive workers, industry is reluctant to hire them. This is the conclusion of retired Air Force Colonel Stanley Hyman, currently a management consultant studying employment problems of retired officers. LTCOL Hyman contends that the ex-military officer is a high job turnover statistic in

civilian industry. He indicates that the average retiree changes jobs once in the first year and twice in the first three years - considerably higher than the new college graduate. This observation is confirmed by a 1972 survey conducted by the Retired Officer's Association of its members. [Gore, 1973] "Firms don't want to bother with these military job turnover statistics," Hyman notes. "The job market is becoming supersaturated . . . Organizations simply can't afford to hire a man whose tenure is questionable." [Jones, 1970]

Andrilla and McGee also noted a reluctance of employers to hire retired officers. They concluded that,

> Much of the reluctance to hire retired military officers is because of their lack of civilian business experience, . . . employers feel that military officers would not do well in an environment where they would have to step down from command level positions and attitudes. In spite of this, it was significant that the vast majority of these firms (325 surveyed) did have retired officers employed. [Andrilla and McGee, 1970]

They also found that usually a retired officer would be hired for a staff or administrative position. Military experience in such fields as data processing, financial management, and operations research could significantly increase the job opportunities and compensation. [Andrilla and McGee, 1970]

It is generally assumed that job opportunities and incomes in second careers decline as military retirement age advances. A 1971 Air Force Times article indicate that, although the number of military people seeking second careers after retirement has been increasing in significant numbers as older

retirees remain unemployed, statistics compiled by the Department of Defense in 1971 show that only 2.8 percent of age 40 to 42 officer retirees do seek work after retirement compared to 16.8 percent of age 52 to 54 officer retirees. [McWalters, 1971] A similar DOD study in 1973 found the full time employment rate among officer retirees (includes those seeking and not seeking work) for ages 41-43 is 75% compared to 66% for ages 50 to 52. [Army Times Pub. Co., 1974] Concerning age at retirement, Lenz concluded:

> As military retirement age advances, the percentage of retirees who enter civilian employment decreases. It may be that this decrease occurs because the increased retirement pay from longer military careers and/or reduced financial needs. Or, it may be that they have chosen not to accept civilian employment because they can find nothing 'suitable' or commensurate with their military skills. [Lenz, 1968]

The individual's capabilities, skills, and education, in large measure, determine his civilian employment opportunities. Thus, those with low civilian employment potential will probably find delayed retirement more financially rewarding (or less of a sacrifice) than will those with a higher employment potential.

VIII. LIMITATIONS AND CONCLUSIONS

This thesis has considered the factors relevant to the military retirement decision of the individual naval officer. Each officer who anticipates remaining on active duty for a minimum of twenty years must realize that at some point retirement will occur. The officer may make the retirement decision himself by requesting voluntary retirement or he may have the decision made for him through involuntary retirement. In any case the retirement point will be between twenty and thirty years of active duty service unless the officer is promoted to flag rank whereby service in excess of thirty years is permitted.

The decision each officer must make is one of choosing the retirement point which best serves his individual needs. What each officer should do is determine by what his particular situation is and by what he wishes to accomplish, given the available alternatives.

The officer may choose to retire after the completion of twenty years of active service with the intention of developing a satisfying second career replete with financial benefits. Conversely, the same officer may choose to remain on active duty for some indefinite amount of time in hopes of promotion. Either choice is influenced by a multitude of factors and alternatives and either choice is equally difficult to make.

The authors offered various means of analyzing the financial aspects of the retirement decision through the use of certain techniques as specified in Chapter IV. It must be clearly understood, however, that the PVTFIS analysis presented in Chapter IV suffers from certain limitations. Those limitations are as follows:

1. Discount rate. The discount rates utilized in the analysis influenced the results of the present value calculations. Different discount rates would have produced different results.
2. Second career income. The manner in which the second career income figures were determined does not lend creditability to their authenticity. The figures cannot be relied upon as being representative of what a retired officer could actually expect to receive.
3. Other income sources. Other income sources were not included in the PVTFIS analysis. An attempt to incorporate investment income and the like into the model would be pure conjecture but the analysis is nonetheless limited due to their absence.
4. Pay raises. Pay raises are not incorporated into the analysis. It is almost a certainty that pay will increase in future years and the PVTFIS figures would have to be adjusted accordingly.
5. Future assumptions. The analysis assumes the future will be like the present. There is no guarantee the retirement system of the future will be even similar to the system of today.

These limitations make it clear that the figurative results of the PVTFIS analysis cannot be considered factual. The PVTFIS analysis was not intended to be factual nor was it intended to be predictive. The military officer should not expect to retire after a given number of years service and thus be guaranteed the associated values in the PVTFIS analysis.

The PVTFIS analysis was intended as a means whereby the individual officer could view the financial aspect of retirement from yet another vantage point. Through the PVTFIS analysis the officer can observe how the various constituents of the PVTFIS affect the total. The analysis will not provide numbers which an officer can 'bank' on, but it can provide a means toward more intelligent decisions regarding retirement and future income.

The officer must project his own individuality into the retirement decision. Accordingly, he must consider his own goals, ideals, values, personality and ability when considering the implications of the analyses of this thesis. What is important to him must modify his interpretation of any and all situations.

Specific conclusions and recommendations that resulted from the analysis are:

1. There are a general lack of positive financial incentives for officers to remain on active duty for a maximum military career. This is contingent upon their having a readily marketable skill in the civilian market.

2. For the officer with substantial financial goals or obligations (to maintain his current standard of living) it is paramount that he have a commitment for civilian employment before he establishes a firm military retirement date.
3. The officer without a particular civilian transferable skill or a graduate degree should be especially thorough in reviewing his civilian employment opportunities and options. Remaining on active duty for the maximum time possible may be his best option.
4. The choice of when to retire is not a clear cut decision. The point of retirement should vary from officer to officer in conjunction with his personal goals and military career prospects. He should assess and weigh the component parts of his goals and career prospects.
5. Depending on the individual situation, the officer may be foregoing up to ten years of financial security and a larger monthly retirement benefit by early retirement. His civilian employment, which is greatly affected by his skills and the status of the economy, is definitely less secure than continuing his military career in most cases. However, this loss of security may be more than compensated for by increased financial rewards and personal satisfaction.
6. In periods of economic recession or slowdown the older military retiree has historically found it difficult to compete for jobs against younger men with similar

educational backgrounds. Despite the officer's experience in the military, employers have tended to hire the younger man who has more current technology and has a longer employment potential.

7. A definite career strategy should be developed years prior to military retirement. A prime objective of this strategy (plan) should be to optimize the officer's qualifications for civilian employment after retirement. Implementation of this plan will benefit the officer's military career while increasing his civilian employability. This plan should review his potential civilian employment opportunities, identify career and personal goals, identify his financial needs, define his military experience and skills in civilian terms, and formulate a systematic course of action to attain his future goals.

Our goal has been to provide an insight into the pertinent factors an officer should consider when planning his military career, military retirement, and his subsequent civilian career. The emphasis has been on the individual officer tailoring his retirement decision to his personal needs and goals. No attempt has been made to lead the officer to a particular decision. The importance of early and continual career planning has emerged throughout this study.

If an officer expects to make an intelligent decision regarding military retirement and future life, he must identify and consider all the factors which influence that decision. Each factor must be assigned a weight or relative measure of

importance which reflects its particular significance. Each factor must also be considered as just one of numerous elements comprising the individual's career strategy. It is up to the individual to identify and weigh those factors relevant to his personal and individual situation and to act accordingly.

APPENDIX A

A. BASIC PRESENT VALUE COMPUTATIONS

Present value formulations include two concepts:

1. Present value of \$1.

2. Present value of an annuity of \$1.

B. PRESENT VALUE OF \$1

To compute the present value of \$1 to be received in the future, the \$1 is subjected to compound discounting for "n" periods at interest rate "i." The applicable formula is:

$$P = \frac{1}{(1 + i)^n} . \qquad (1)$$

The present value of \$1 to be received seven years hence at an annual interest rate of 5% is computed as follows:

$$P = \frac{1}{(1 + .05)^7} = \frac{1}{(1.05)^7} = \frac{1}{1.40709} = .71068$$

Determination of the present value of a sum to be received at some future time can be accomplished by multiplying the amount in question by the applicable present value of \$1.

For example, to determine the present value of \$1000 to be received seven years hence at 5%, all that is required is to multiply \$1000 by the .7107 obtained above. The following formula may also be used:

$$P = \frac{A}{(1 + i)^n} \qquad (2)$$

where "A" represents the future amount to be received. Using either method the identical result of $710.68 is obtained.

C. PRESENT VALUE OF AN ANNUITY OF $1

The present value of an annuity of $1 is the value now of a series of equal amounts (Rents) to be received each period for some specified number of periods in the future. To compute the present value of an annuity of $1 to be received "n" periods into the future at interest rate "i," the following formula applies:

$$P = \frac{1 - \frac{1}{(1 + i)^n}}{i} \tag{3}$$

The present value of $1 to be received each year for seven years at 5% is computed as follows:

$$P = \frac{1 - \frac{1}{(1.05)^7}}{.05} = \frac{1 - .71068}{.05} = \frac{.28932}{.05} = 5.7864$$

Determination of the present value an amount (Rent) to be received each period for "n" periods into the future may be accomplished by multiplying the Rent in question by the applicable present value of $1. The following formula applies:

$$P = R\left(\frac{1 - \frac{1}{(1 + i)^n}}{i}\right) \tag{4}$$

where "R" represents the Rent to be received per period.

The present value of $1,000 received each year for seven years at 5% is computed as follows:

$$P = \$1{,}000\left(\frac{1 - \frac{1}{(1.05)^7}}{.05}\right) = \$1{,}000(5.7864) = \$5{,}786.40$$

D. CONTINUOUS COMPOUNDING

For purposes of this thesis the authors decided to utilize continuous compounding, hence continuous discounting, for all present value computations. Past studies conducted on related topics have generally utilized annual or something less than continuous discounting, hence we hoped to achieve a slightly different point of view. The overall effect of continuous vs. a more infrequent discounting period is resultant larger numbers.

Given continuous discounting, it can be shown that e^{-ni} represents the present value of $1 due n periods hence. [Bowen, p. 300] It can also be shown that the present value of an annuity is represented by the formula:

$$P = R\left(\frac{1 - e^{-ni}}{i}\right). \tag{5}$$

In order to apply the above formula to monthly periods, it is necessary to convert the yearly interest rate to a monthly rate and to express "n" in months. Conversion to a monthly interest rate can be accomplished by dividing the yearly rate by twelve. Thus, an annual interest rate of 6% (.06) becomes .005.

Formula (5) is utilized in the computation of Tables V, VI, XI, XII, XIII, and XIV. The specific use of formula (5) in the model for each set of tables is set forth in the following discussion.

E. TABLES V AND VI

Tables V and VI feature the present value of the total future retired pay computed at the twenty year point. If an officer were to retire at some point in excess of twenty years, that period of time between twenty years and the actual time of retirement could not be included in present value computations because retirement pay would not be received during that gap. Formula (5) is designed such that it accounts for rents to be received from the present into the future without any gaps. Therefore, a method must be developed to account for the gaps which occur between twenty years and actual retirement.

This is easily accomplished by determining the present value of the total retirement income as if the officer had retired at twenty years and then subtracting from this the present value of the amount of retired pay computed over the gap between twenty years and actual retirement. The equation is:

$$PV_{MRP} = MMRP\left(\frac{1 - e^{-in}}{i}\right) - MMRP\left(\frac{1 - e^{-in^*}}{i}\right) \qquad (6)$$

where

PV_{MRP} = Present value of military retired pay

MMRP = Monthly military retired pay

i = Monthly interest rate

n = Total number of months until mortality

n^* = Number of months until retired pay begins

F. TABLEX XI AND XII

Tables XI and XII feature the present value of the total future income stream (PVTFIS). The PVTFIS is determined by adding the present value (PV) of the following income sources:

AP = Active Duty Military Pay

MRP = Military Retirement Pay

SCP = Second Career Pay

SCRP = Second Career Retirement Pay

The model may be presented in the following form:

$$PVTFIS = PV_{AP} + PV_{MRP} + PV_{SCP} + PV_{SCRP}.$$

The present value of the various income sources are determined in the following manner.

Present Value of the Active Duty Pay (PV_{AP})

The PVAP is equal to the present value of the monthly active duty pay at the given discount rate for the number of months received. The equation is:

$$PV_{AP} = MAP\left(\frac{1 - e^{-in}}{i}\right) \tag{7}$$

where

MAP = Monthly AP

n = Number of months active duty pay is received.

G. PRESENT VALUE OF MILITARY RETIRED PAY (PVMRP)

The PVMRP was previously discussed and may be represented by equation (6):

$$PV_{MRP} = MMRP\left(\frac{1 - e^{-in}}{i}\right) - MMRP\left(\frac{1 - e^{-in^{*}}}{i}\right). \qquad (6)$$

H. PRESENT VALUE OF SECOND CAREER PAY (PVSCP)

The PVSCP is determined in much the same manner as is the PVMRP because the second career pay is also subjected to gaps when second career income begins at any point beyond twenty years of active service. The equation is:

$$PV_{SCP} = MSCP\left(\frac{1 - e^{-in}}{i}\right) - MSCP\left(\frac{1 - e^{-in^{**}}}{i}\right) \qquad (8)$$

where:

MSCP = Monthly SCP

n = Number of months until age 65

n** = Number of months until second career income begins

I. PRESENT VALUE OF SECOND CAREER RETIRED PAY (PVSCRP)

The PVSCRP is also determined in much the same way as is the PVMRP and the PVSCP because the SCRP must always begin at a point beyond twenty years of active service. This point is assumed to be age 65 for this analysis. The SCRP is further assumed to be paid from age 65 until mortality. The equation is:

$$PV_{SCRP} = MSCRP\left(\frac{1 - e^{-in}}{i}\right) - MSCRP\left(\frac{1 - e^{-in^{***}}}{i}\right) \qquad (9)$$

where:

MSCRP = Monthly SCRP

n = Number of months until mortality

n*** = Number of months until SCRP begins

J. SAMPLE COMPUTATION

A sample computation will serve to demonstrate how the model functions. The sample computation is based on an O-6 who retired after 26 years of active service at a discount rate of 5%:

$$PV_{AP} = MAP\left(\frac{1 - e^{-in}}{i}\right) = \$195,898$$

where:

$i = .00416...$

$n = 84$ months

$$PV_{MRP} = MMRP\left(\frac{1 - e^{-in}}{i}\right) - MMRP\left(\frac{1 - e^{-in*}}{i}\right)$$

$$\$263,358 \quad - \quad \$96,851 \quad = \$166,507$$

where:

$n = 292.8$ months

$n^* = 72$ months

$$PV_{SCP} = MSCP\left(\frac{1 - e^{-in}}{i}\right) - MSCP\left(\frac{1 - e^{-in**}}{i}\right)$$

$$\$228,507 \quad - \quad \$107,550 \quad = \$120,957$$

where:

$n = 192$ months

$n^{**} = 72$ months

$$PV_{SCRP} = MSCRP\left(\frac{1 - e^{-in}}{i}\right) - MSCRP\left(\frac{1 - e^{-in***}}{i}\right)$$

$46,853 - $36,609 = $10,244

where:

n = 292.8 months

n*** = 192 months

PVTFIS = $493,606

K. TABLES XIII AND XIV

Tables XIII and XIV utilize present value formulas in the computation of the present value of the difference between retired pay received by early vs. late retirees. The present value is computed from the point of late retirement until mortality. There are no gaps in the time span over which the retirement pay difference will be received, hence the basic formula (5) may be used in the following form:

$$PVD = MDRP\left(\frac{1 - e^{-in}}{i}\right)$$

where:

PVD = Present value of the difference in retired pay

MDRP = Monthly difference in retired pay

n = Number of months from late retirement point until mortality

APPENDIX B

EXPECTED VALUE

We can investigate the PVTFIS associated with promotion from O-5 to O-6 through the application of an expected value analysis. As an example we will assume a hypothetical O-5 decides to remain on active duty until he has completed a minimum of 22 years. During this time he will have been considered for promotion to O-6 by at least one selection board. If this O-5 is selected for promotion to O-6, he will remain on active duty until completion of 24 years and then retire. If he is not selected for promotion to O-6, he will retire after 22 years are completed. We will also assume this O-5 has a .476 probability of promotion to O-6. This particular probability is derived from the promotion opportunity percentage resulting from the FY76 selection board for the 1310 and 1110 designators. Although the promotion opportunity percentage and the probability of promotion are not the same, for computational purposes we shall assume they are.

The expected PVTFIS (E[PVTFIS]) of the O-5 in question can now be expressed as the PVTFIS of an O-6 retiring after 24 years multiplied (weighted) by the probability of promotion to O-6 plus the PVTFIS of an O-5 who retires after 22 years multiplied by the probability of nonselection to O-6 (1-probability of selection). In equation form:

$$E[PVTFIS] = (.476)\cdot(PVTFIS_{O6}\text{ after }24) + (.524)\cdot(PVTFIS_{O5}\text{ after }22).$$

Substituting values from Table XI, the equation becomes

$$E[PVTFIS] = (.476)\cdot(\$512{,}000) + (.524)\cdot(\$482{,}000) = \$496{,}280.$$

The hypothetical O-5 in our discussion can now employ, in his retirement decision process, a number which takes his probability of promotion to O-6 into consideration. If he were at the 21 year point, he might very well choose to stay on active duty for one more year because the expected PVTFIS of remaining for that additional year is greater than the PVTFIS associated with retirement after 21 or 22 years. It is true that the O-5 may fail selection to O-6 and therefore anticipate a PVTFIS of $482,000. But it is also true that he may be selected to O-6 and anticipate a PVTFIS of $512,000. The expected value analysis allows this O-5 (and any actual officer) to take the probability of each event's occurrence into consideration and therefore make a more rational decision.

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